

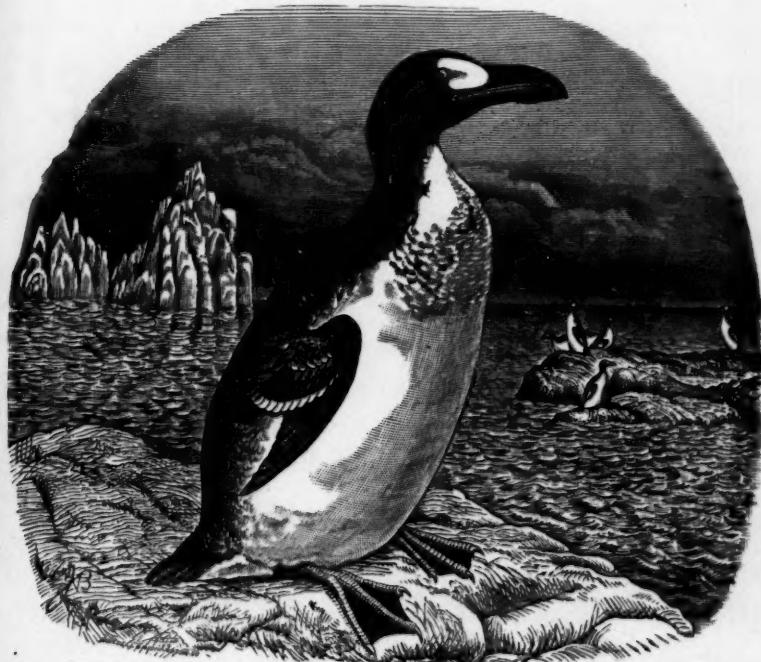
OLD SERIES, }  
VOL. XXXIII. }

CONTINUATION OF THE  
BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB { NEW SERIES,  
VOL. XXV.

# The Auk

A Quarterly Journal of Ornithology

EDITOR  
J. A. ALLEN  
ASSOCIATE EDITOR  
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VOLUME XXV  
PUBLISHED BY  
**The American Ornithologists' Union**

CAMBRIDGE, MASS.

1908

Entered as second-class mail matter in the Post Office at Boston, Mass.

THE E. G. BROWN

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LEGGE, WILLIAM V., Cullenswood House, St. Mary's, Tasmania.....	1891
MACFARLANE, ROBERT, Winnipeg, Manitoba .....	1886
MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary	1884
MENZBIER, Dr. M., Imperial Society of Naturalists, Moscow.....	1884
NAMIYE, M., Tokio .....	1886
NICHOLSON, FRANCIS, The Knoll, Windermere, England .....	1884
NORTH, ALFRED J., Australian Museum, Sydney, New South Wales..	1902
OATES, EUGENE WILLIAM, 1 Carlton Gardens, Ealing, London, W... .	1884
PALMÉN, Dr. J. A., Helsinki, Finland .....	1883
PYCRAFT, W. P., British Museum (Nat. Hist.), Cromwell Road, Lon- don, S. W.....	1902
RAMSEY, E. P., Sydney, New South Wales.....	1884
RINGER, FREDERIC, Nagasaki.....	1888
ROTHSCHILD, HOR. WALTER L., Zoölogical Museum, Tring, England	1898
SCHALOW, HERMAN, 15 Schleswiger Ufer, Berlin, N. W.....	1884
SCLATER, WILLIAM LUTLEY, Colorado Springs, Col.....	1906
SHELLEY, Capt. G. E., 39 Edgerton Gardens, South Kensington, London, S. W.....	1884
SUSHKIN, Dr. PETER, Imperial University, Moscow.....	1903
THEEL, Dr. HJALMAR, University of Upsala, Upsala, Sweden.....	1884
TSCHUSI ZU SCHMIDHOFFEN, VICTOR RITTER VON, Villa Tannenhof, bei Hallein, Salzburg, Austria .....	1884
WATERHOUSE, F. H., 3 Hanover Square, London, W.....	1889
WINGE, Dr. HERLUF, Copenhagen .....	1903
WORCESTER, Prof. DEAN C., Manila, P. I.....	1903
ZELEDON, Don José C., San José, Costa Rica .....	1884

## MEMBERS

ALLEN, FRANCIS H., 4 Park St., Boston, Mass.....	1901
ALLEN, Dr. GLOVER M., 16 Oxford St., Cambridge, Mass.....	1904
ALLISON, ANDREW, Ellisville, Miss.....	1902
ATTWATER, H. P., Box 697, Houston, Texas.....	1901

BAILEY, Mrs. VERNON, 1834 Kalorama Ave., Washington, D. C.	1901
BAILEY, VERNON, 1834 Kalorama Ave., Washington, D. C.	1901
BAILY, WILLIAM L., Ardmore, Pa.	1901
BARBOUR, Prof. ERWIN H., Univ. of Nebraska, Lincoln, Neb.	1903
BARTSCH, PAUL, Smithsonian Inst., Washington, D. C.	1902
BEEBE, C. WILLIAM, N. Y. Zoölogical Park, New York City	1903
BENT, ARTHUR C., Taunton, Mass.	1902
BOND, FRANK, 3127 Newark St., Cleveland Park, Washington, D. C.	1901
BRAISLIN, Dr. WILLIAM C., 556 Washington Ave., Brooklyn, N. Y.	1902
BROWN, HERBERT, Tucson, Arizona	1901
BRUNER, Prof. LAWRENCE, Univ. of Nebraska, Lincoln, Neb.	1901
BRYAN, WILLIAM ALANSON, Bishop Museum, Honolulu, H. I.	1901
BURNS, FRANK L., Berwyn, Pa.	1901
BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind.	1901
CHERRIE, GEORGE K., Mus. Brooklyn Inst., Eastern Parkway, Brook-	
lyn, N. Y.	1901
CLARK, AUSTIN HOBART, U. S. National Museum, Washington, D. C.	1905
CLARK, Prof. HUBERT LYMAN, Museum of Comparative Zoölogy, Cam-	
bridge, Mass.	1902
DAGGETT, FRANK S., 441 Postal Telegraph Building, Chicago, Ill.	1901
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DEARBORN, NED, Field Museum, Chicago, Ill.	1907
EATON, ELON HOWARD, Canandaigua, N. Y.	1907
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D. C.	1901
FINLEY, WILLIAM L., Box 60A, R. F. D. I., Milwaukee, Ore.	1907
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FUERTES, LOUIS AGASSIZ, Cornell Heights, Ithaca, N. Y.	1901
GAULT, BENJAMIN TRUE, Glen Ellyn, Ill.	1903
GOLDMAN, EDWARD ALFONSO, Dept. of Agriculture, Washington, D. C.	1902
HARDY, MANLY, 159 Wilson St., Brewer, Maine.	1901
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JOB, Rev. HERBERT K., Kent, Conn.	1901
JORDAN, Prof. DAVID STARR, Stanford University, Cal.	1901
KNIGHT, ORA WILLIS, 84 Forest Ave., Bangor, Me.	1907
KNOWLTON, F. H., U. S. Nat. Museum, Washington, D. C.	1902
MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass.	1901
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MAILLARD, JOSEPH, San Geronimo, Cal.	1901
MILLER, Mrs. OLIVE THORNE, Garvanza, Cal.	1901
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MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa.	1903

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MURDOCH, JOHN, 19 Wendell St., Cambridge, Mass.....	1901
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PEARSON, T. GILBERT, Greensboro, N. C.....	1902
PENNOCK, CHARLES J., Kennett Square, Pa.....	1901
PREBLE, EDWARD A., Dept. of Agriculture, Washington, D. C.....	1901
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ROBINSON, Major WIRT, U. S. A., West Point, N. Y.....	1901
SETON, ERNEST THOMPSON, Cos Cob, Conn.....	1901
SILLOWAY, PERLEY MILTON, Lewistown, Montana.....	1902
SORNBORGER, JEWELL D., Ipswich, Mass.....	1901
STEPHENS, FRANK, 3756 Park Boulevard, San Diego, Cal.....	1901
STRONG, Dr. REUBEN M., Dept. Zoöl., Univ. of Chicago, Chicago, Ill.	1903
THAYER, ABBOTT H., Monadnock, N. H.....	1901
THAYER, JOHN ELIOT, Lancaster, Mass.....	1905
TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa.....	1901
TORREY, BRADFORD, Newton Lower Falls, Mass.....	1901
TOWNSEND, CHARLES H., Aquarium, Battery Park, New York City.	1901
TOWNSEND, Dr. CHARLES WENDELL, 76 Marlborough St., Boston, Mass.	1905
TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa.....	1901
WAYNE, ARTHUR T., Mt. Pleasant, S. C.....	1906
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WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn.....	1901

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AIKEN, CHARLES EDWARD HOWARD, 2 E. Kiowa St., Colorado Springs, Colo.....	1898
AIKEN, Hon. JOHN, Greenfield, Mass.....	1905
ALLEN, Miss EDITH, 310 W. Olive Ave., Redlands, Cal.....	1906
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ANDERSON, Mrs. J. C., Englewood, N. J.....	1903
ANDERSON, Dr. RUDOLPH M., Blees Military Academy, Macon, Mo.	1907
ANDREWS, ROY C., Amer. Mus. Nat. Hist., New York City.....	1906
ANGELL, WALTER A., 37 N. Main St., Providence, R. I.....	1901

ARCHBOLD, JOSEPH A., 107 Hodge Ave., Buffalo, N. Y.	1903
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ARNOW, ISAAC F., St. Marys, Ga.	1903
ATKINSON, GEORGE E., Portage la Prairie, Manitoba	1903
BABSON, W. A., South Orange, N. J.	1901
BAER, LYLE S., 304 W. Grant St., Streator, Ill.	1907
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BALES, Dr. BLENN R., 151 N. Main St., Circleville, Ohio	1907
BALL, Mrs. BENNET F., Oakville, Conn.	1905
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BARBOUR, Rev. ROBERT, Y. M. C. A., Montclair, N. J.	1902
BARBOUR, THOMAS, Mus. of Comp. Zoölogy, Cambridge, Mass.	1903
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BARNES, Hon. R. MAGOON, Lacon, Ill.	1889
BARRY, Miss ANNA K., 5 Bowdoin Ave., Dorchester, Mass.	1907
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BAXTER, GEORGE STRONG, Jr., 17 William St., New York City	1894
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BEAUPRE, EDWIN, Okotoks, Alberta	1905
BECK, ROLLO HOWARD, Berryessa, Cal.	1894
BEERS, HENRY W., 91 Denver Ave., Bridgeport, Conn.	1895
BEHR, HERMAN, Jennings, Md.	1907
BEHR, OTTO, Lopez, Pa.	1907
BEICE, Capt. JOHN J., Oakville, Cal.	1907
BENNETTS, WILLIAM J., 1941 1st St. N. W., Washington, D. C.	1901
BENSON, LESLIE B., Port Jefferson, N. Y.	1906
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BERIER, DE LAGNEL, Ridgewood, N. J.	1885
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BIGELOW, HENRY BRYANT, Lincoln, Mass.	1897
BIGELOW, HOMER LANE, Old Orchard Road, Chestnut Hill, Mass.	1902
BIGELOW, JOSEPH SMITH, Jr., Webster Atlas Bank, Sears Bldg., Boston, Mass.	1896
BIGNELL, Mrs. EFFIE, 135 College Ave., New Brunswick, N. J.	1899
BILDERSE, ISAAC, 213 W. 105th St., New York City	1907
BINGAMAN, W. H., Ash Creek, South Dakota	1906
BIRNIE, WILLIAM A., Box 14, Springfield, Mass.	1904
BLACKWELDER, ELIOT, Univ. of Wisconsin, Madison, Wis.	1895
BLAIN, Dr. ALEX. W., Jr., Harper Hospital, Detroit, Mich.	1901

BLAKE, FRANCIS G., Box 97, Hanover, N. H.	1901
BLAKE, MAURICE C., 15 Crosby Hall, Hanover, N. H.	1907
BLATCHLEY, W. S., 1530 Parke Ave., Indianapolis, Ind.	1895
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BLUNT, Miss ELIZA SINCLAIR, Box 75, Elizabethtown, N. Y.	1901
BOARDMAN, Miss E. D., 416 Marlborough St., Boston, Mass.	1906
BOBB, C. L., cor. Williamson and Ingersoll Sts., Madison, Wis.	1907
BOEWE, MAX, 15 King St., Taunton, Mass.	1903
BOGERT, WILLIAM S., Box 53, Leonia, N. J.	1904
BOHLMAN, HERMAN T., 46 Ninth St. N., Portland, Oregon.	1901
BOND, HARRY L., Lakefield, Minn.	1890
BOSSON, CAMPBELL, 723 Tremont Bldg., Boston, Mass.	1906
BOWDISH, B. S., Demarest, N. J.	1891
BOWDISH, Mrs., B. S., Demarest, N. J.	1902
BOWDITCH, HAROLD, Pond St., Jamaica Plain, Mass.	1900
BOWLES, JOHN HOOPER, 401 S. G St., Tacoma, Wash.	1891
BOYD, ERNEST, 4276 Cook Ave., St. Louis, Mo.	1906
BRACKEN, Mrs. HENRY MARTYN, 1010 Fourth St. S. E., Minneapolis, Minn.	1897
BRADFORD, Mrs. J. L., Morris Building, New Orleans, La.	1897
BRADFORD, MOSES B. L., Concord Public Library, Concord, Mass.	1889
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.	1902
BRANDRETH, COURtenay, Cliff Cottage, Ossining, N. Y.	1905
BRANDRETH, FRANKLIN, Cliff Cottage, Ossining, N. Y.	1889
BREWSTER, EDWARD EVERETT, 316 East C St., Iron Mountain, Mich.	1893
BRIDGE, Mrs. EDMUND E., 52 Wyman St., West Medford, Mass.	1902
BRIGHT, Miss ANNA L., Green Hill Farm, Overbrook, Pa.	1903
BRIMLEY, H. H., Raleigh, N. C.	1904
BROCK, Dr. HENRY HERBERT, 687 Congress St., Portland, Me.	1894
BROCKWAY, ARTHUR WILLIAM, Hadlyme, Conn.	1906
BROOKS, ALLAN, Okanagan Landing, B. C.	1902
BROOKS, WINTHROP S., Adams St., Milton, Mass.	1907
BROOKS, Rev. EARLE AMOS, Weston, W. Va.	1892
BROWN, D. E., 949 24th Ave., Seattle, Wash.	1906
BROWN, EDWARD J., Lemon City, Florida.	1891
BROWN, HUBERT H., 100 Gothic Ave., Toronto Junction, Ontario	1889
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.	1895
BROWNSON, W. H., Superintendent of Schools, Portland, Me.	1903
BRYANT, OWEN, Cohasset, Mass.	1903
BUCHANAN, C. S., New Haven, Mo.	1906
BUCK, HENRY ROBINSON, 18 Girard Ave., Hartford, Conn.	1897
BUMPUS, Dr. HERMON C., Am. Mus. Nat. Hist., New York City.	1901
BURGESS, JOHN KINGSBURY, Chestnut St., Dedham, Mass.	1898
BURKE, WM. BARDWELL, 130 Spring St., Rochester, N. Y.	1901
BURNETT, WILLIAM L., Box 483, Loveland, Colo.	1895
BURNET, THOMAS L., 83 New Park St., Lynn, Mass.	1905

BURR, FREEMAN F., 39 Thompson Ave., East Haven, Conn.	1907
BURTCH, VERDI, Branchport, N. Y.	1903
BUTLER, Miss CHARLOTTE W., 75 Cabot St., Beverly, Mass.	1904
BUTLER, ERNEST A., 3417 N. 19th St., Philadelphia, Pa.	1906
BUTTRICK, PHILIP L., 296 Columbus Ave., New Haven, Conn.	1907
BUXBAUM, Mrs. CLARA E., St. Joseph, Mich.	1895
CABOT, LOUIS, Brookline, Mass.	1904
CADY, Mrs. JOHN H., 127 Power St., Providence, R. I.	1905
CALLENDER, JAMES PHILLIPS, 603 Springfield Ave., Summit, N. J.	1903
CAMERON, E. S., Fallon, Montana.	1903
CAMPBELL, Mrs. ROBERT, 280 Wildwood Ave., Jackson, Mich.	1905
CARPENTER, Rev. CHARLES KNAPP, 183 Fox St., Aurora, Ill.	1894
CARPENTER, GEORGE I., 696 Halsey St., Brooklyn, N. Y.	1907
CARRIKER, M. A., Jr., Carnegie Museum, Pittsburgh, Pa.	1907
CARROLL, JAMES M., S. M. Baptist Academy, San Marcos, Tex.	1905
CARTER, JOHN D., Lansdowne, Pa.	1907
CASE, Rev. BERT F., Middle Haddam, Conn.	1903
CASE, CLIFFORD M., 100 Ashley St., Hartford, Conn.	1892
CASH, HARRY A., 54 Spring St., Pawtucket, R. I.	1898
CATLIN, JAMES P., Ottawa, Ill.	1905
CHADBOURNE, Mrs. A. P., Box 114, Back Bay P. O., Boston, Mass.	1907
CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.	1885
CHAMBERS, W. LEE, Santa Monica, Cal.	1907
CHANAY, RALPH W., 6046 Woodlawn Ave., Chicago, Ill.	1907
CHAPIN, Prof. ANGIE CLARA, 25 Freeman Cottage, Wellesley, Mass.	1896
CHAPIN, JAMES, 623 W. 142d St., New York City.	1906
CHAPMAN, Dr. E. A., 107 E. 23rd. St., New York City.	1905
CHASE, Mrs. AGNES, 1350 F St. N. E., Washington, D. C.	1896
CHASE, SIDNEY, Nantucket, Mass.	1904
CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.	1901
CHUBB, SAMUEL H., Amer. Mus. Nat. Hist., New York City.	1894
CLARK, B. PRESTON, 55 Kilby St., Boston, Mass.	1907
CLARK, EDWARD B., 341 Oak St., Chicago, Ill.	1900
CLARK, Miss EMILY L., 103 Main St., St. Johnsbury, Vt.	1905
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.	1895
CLARK, Miss SUSAN E., 103 Main St., St. Johnsbury, Vt.	1905
CLARKE, Dr. CHARLES K., Toronto Asylum, Toronto, Ont.	1902
CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.	1896
CLARKE, ROWENA A., Kirkwood Station, St. Louis, Mo.	1906
CLEAVES, HOWARD H., Princes Bay, Staten Island, N. Y.	1907
CLEVELAND, Miss LILIAN, Woods Edge Road, West Medford, Mass.	1906
CLEVELAND, Dr. CLEMENT, 59 W. 38th St., New York City.	1903
COALE, HENRY K., Highland Park, Ill.	1883
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COGGINS, HERBERT LEONARD, 5025 McKean Ave., Germantown, Philadelphia, Pa.	1898

COLBURN, ALBERT E., 1204 S. Main St., Los Angeles, Cal.	1891
COLVIN, WALTER S., Box 121, Osawatomie, Kan.	1896
COMEAU, NAPOLEON A., Godbout, Quebec	1885
COMEY, ARTHUR C., care F. L. Scholl, R. F. D. 3, Dixon, Ill.	1901
COMMONS, Mrs. F. W., 2437 Park Ave., Minneapolis, Minn.	1902
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CRAM, R. J., 26 Hancock Ave. W., Detroit, Mich.	1893
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CRANE, Miss CLARA L., Dalton, Mass.	1904
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CROLIUS, Miss ANNE A., 815 Carnegie Hall, New York City	1897
CROMWELL, JAMES W., Box 246, Summit, N. J.	1904
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CROSBY, MAUNSELL S., Grasmere, Rhinebeck, N. Y.	1904
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CURL, H. C., New Naval Hospital, Washington, D. C.	1907
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DART, Dr. LESLIE O., Hotel Summers, Minneapolis, Minn.	1898
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DAVID, F. M., Damariscotta, Me.	1905
DAVIS, CHARLES H., 515 Michigan Ave., Saginaw, Mich.	1906
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DERBY, RICHARD, 113 E. 71st St., New York City	1898
DEVINE, J. L., 5478 Ellis Ave., Chicago, Ill.	1903
DEWEY, Dr. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.	1900
DEWING, THOMAS W., 82 E. 55th St., New York City	1907
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DICKEY, SAMUEL S., 31 S. West St., Waynesburg, Pa.....	1905
DILLE, FREDERICK M., 2927 W. 28th Ave., Denver, Colo.....	1892
DIONNE, C. E., Laval Univ., Quebec .....	1893
DIXON, FREDERICK J., Elm Ave., Hackensack, N. J.....	1891
DOBBIN, WILLIAM L., 43 Beverley St., Rochester, N. Y.....	1902
DODGE, CHARLES W., Univ. of Rochester, Rochester, N. Y.....	1900
DODGE, FRED CLINTON, 125 Milk St., Boston, Mass.....	1897
DODGE, JULIAN M., Wenham, Mass.....	1903
DOGGETT, ALLEN B., Jr., Dartmouth College, Hanover, N. H.....	1906
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DOUBLEDAY, Mrs. FRANK NELSON, Mill Neck, Long Island, N. Y.....	1897
DOUGHERTY, Gen. WILLIAM E., 1409 E. 14th St., Fruitvale, Cal.....	1890
DREW, Miss EMMA E., 82 Grant St., Burlington, Vt.....	1904
DROWNE, Dr. FREDERICK PEABODY, Chilesburg, Caroline Co., Va.....	1899
DRUMMOND, Miss MARY, 208 West St., Wheaton, Ill.....	1904
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DUGMORE, ARTHUR RADCLYFFE, Newfoundland, N. J.....	1899
DULL, Mrs. A. P. L., 211 N. Front St., Harrisburg, Pa.....	1900
DUNBAR, W. LINFRED, Union Metallic Cartridge Co., Bridgeport, Conn.....	1906
DURFEE, OWEN, Box 125, Fall River, Mass.....	1887
DUTCHER, Capt. BASIL HICKS, U. S. A., Field Ave., Plainfield, N. J.....	1886
DYCHE, Prof. L. L., Lawrence, Kansas.....	1886
DYKE, ARTHUR CURTIS, Bridgewater, Mass.....	1902
EASTGATE, ALFRED, Harrisburg, Nelson Co., N. D.....	1906
EASTMAN, HARRY D., Framingham, Mass.....	1891
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EDWARDS, STANLEY W., 36 Pearl St., Hartford, Conn.....	1907
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ELLS, GEORGE P., Norwalk, Conn.....	1904
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ELY, Mrs. THEODORE N., Bryn Mawr, Pa.....	1901
EMBODY, GEORGE CHARLES, Randolph-Macon College, Ashland, Va.....	1898
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FARR, MARCUS S., Princeton University, Princeton, N. J.....	1900

FARWELL, Mrs. FRANCIS COOLEY, Edgewood, Lake Forest, Ill.	1898
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FAY, S. PRESCOTT, 169 Commonwealth Ave., Boston, Mass.	1907
FELGER, ALVA HOWARD, North Side High School, Denver, Colo.	1898
FELL, Miss EMMA TREGO, Holicong, Pa.	1903
FERRY, JOHN FARWELL, Field Museum of Nat. Hist., Chicago, Ill.	1894
FIELD, EDWARD B., 616 Andrews Bldg., Minneapolis, Minn.	1898
FISHER, Miss ELIZABETH WILSON, 1502 Pine St., Philadelphia, Pa.	1896
FISHER, WALTER T., 463 N. State St., Chicago, Ill.	1907
FISHER, WILLIAM HUBBELL, 13 Wiggins Block, Cincinnati, Ohio.	1883
FLANAGAN, JOHN H., 392 Benefit St., Providence, R. I.	1898
FLETCHER, Mrs. MARY E., Proctorsville, Vt.	1898
FOOTE, Miss F. HUBERTA, 90 Locust Hill Ave., Yonkers, N. Y.	1897
FORBES, HENRY S., Milton, Mass.	1904
FORD, EDWIN S., 71 Washington St., Morristown, N. J.	1907
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.	1901
FORSYTH, DOUGLAS, Box 1808, New Orleans, La.	1906
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.	1898
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.	1883
FRANKLIN, DWIGHT, Amer. Mus. Nat. Hist., New York City.	1907
FRASER, DONALD, Johnstown, N. Y.	1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.	1903
FRENCH, CHARLES H., Canton, Mass.	1904
FULLER, CLARENCE T., 56 Lefferts Place, Brooklyn, N. Y.	1907
FULLER, T. OTIS, Needham, Mass.	1904
FUTCHER, Dr. THOMAS B., 3 W. Franklin St., Baltimore, Md.	1906
GANO, Miss LAURA, Earlham Place, Richmond, Ind.	1903
GARDINER, CHARLES BARNES, 5 Minard Place, Norwalk, Ohio.	1903
GARRICK, JAMES P., Jr., Weston, Richmond Co., S. C.	1906
GATH, JOHN, Box 236, Torrington, Conn.	1901
GIBSON, LANGDON, 18 Washington Ave., Schenectady, N. Y.	1904
GIFFORD, EDWARD WINSLOW, Cal. Acad. Sci., San Francisco, Cal.	1904
GILMAN, M. FRENCH, Sacaton, Arizona.	1907
GOODALE, Dr. JOSEPH LINCOLN, 258 Beacon St., Boston, Mass.	1885
GOODRICH, JULIET T., 10 Astor St., Chicago, Ill.	1904
GOODWIN, Miss AMELIA M., 10 Follen St., Cambridge, Mass.	1904
GOSS, Mrs. ALETTA W., 5475 Ridgewood Court, Chicago, Ill.	1902
GOULD, JOSEPH E., 5 Clifton St., Norfolk, Va.	1889
GRANGER, Miss HELEN, Pierce Hall, Cambridge, Mass.	1904
GRANGER, WALTER W., Amer. Mus. Nat. Hist., New York City.	1891
GRAVES, Mrs. CHARLES B., 66 Franklin St., New London, Conn.	1905
GREENOUGH, Mrs. AMELIA P., 377 Beacon St., Boston, Mass.	1904
GREENOUGH, HENRY VOSE, 45 Carlton St., Brookline, Mass.	1901
GREGORY, STEPHEN S., Jr., 89 Astor St., Chicago, Ill.	1906

GRIFFING, MOSES BOWDITCH, Shelter Island Heights, N. Y.	1897
GROSS, ALFRED O., Nat. Hist. Bldg., Univ. of Illinois, Urbana, Ill.	1907
HADLEY, ALDEN H., Melbourne, Fla.	1906
HALES, HENRY, Ridgewood, N. J.	1890
HALL, H. PORTER, Leominster, Mass.	1904
HAMFELDT, A., The Ware Times, Ware, Ia.	1892
HANKINSON, THOMAS LEROY, Charleston, Ill.	1897
HANN, HERBERT H., 700 Springfield Ave., Summit, N. J.	1903
HARDON, Mrs. HENRY W., 315 West 71st St., New York City.	1905
HARDY, JOHN H., Jr., 24 Irving St., Arlington, Mass.	1905
HARPER, FRANCIS, 557 First Ave., College Point, N. Y.	1907
HARRIMAN, Miss MARY, 1 E. 55th St., New York City.	1899
HARVEY, J. DOWNEY, 2555 Webster St., San Francisco, Cal.	1906
HARVEY, Miss RUTH SAWYER, Bond Hill, Cincinnati, Ohio.	1902
HASKELL, Miss HELEN P., 1207 Henry St., Alton, Ill.	1905
HATHAWAY, HARRY S., Box 498, Providence, R. I.	1897
HAVEMEYER, H. O., Jr., 113 Wall St., New York City.	1893
HAYES, Miss PAULINE J., 212 S. Sycamore St., Centralia, Ill.	1907
HAZARD, Hon. R. G., Peace Dale, R. I.	1885
HEAD, Miss ANNA, 2538 Channing Way, Berkeley, Cal.	1903
HEALEY, Rev. SULLIVAN SCOTT, Pullman, Wash.	1906
HELME, ARTHUR H., Miller Place, N. Y.	1888
HEMPHILL, ASHTON E., Y. M. C. A., Holyoke, Mass.	1905
HENCHY, MICHAEL F., Box 252, Unionville, Conn.	1906
HENDERSON, Judge JUNIUS, Boulder, Colo.	1903
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.	1885
HENNING, CARL FRITZ, 922 8th St., Boone, Ia.	1906
HENNINGER, Rev. WALTHER F., New Bremen, Ohio.	1898
HERRICK, HAROLD, 25 Liberty St., New York City.	1905
HIGBEE, HARRY G., 13 Austin St., Hyde Park, Mass.	1900
HILL, A. C., 400 Pleasant St., Belmont, Mass.	1905
HILL, JAMES HAYNES, Box 485, New London, Conn.	1897
HILL, Mrs. THOMAS R., 4629 Baltimore Ave., Philadelphia, Pa.	1903
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio.	1899
HINE, Mrs. JANE L., Sedan, Ind.	1890
HINTON, Miss SUSAN McV., 41 W. 32d St., New York City.	1900
HITCHCOCK, FRANK H., Cosmos Club, Washington, D. C.	1891
HIX, GEORGE E., 630 Columbus Ave., New York City.	1904
HODGE, Prof. CLIFTON FREMONT, Clark Univ., Worcester, Mass.	1899
HOLBROOK, Miss ISABEL B., Rhode Island Normal School, Providence, R. I.	1905
HOLDEN, Mrs. EMELINE R., 13 E. 79th St., New York City.	1902
HOLDEN, Mrs. EDWIN B., 323 Riverside Drive, New York City.	1903
HOLLAND, Dr. WILLIAM J., 5th and Bellefield Aves., Pittsburgh, Pa.	1899
HOLLISTER, NED, Biological Survey, Washington, D. C.	1894

HOLLISTER, WARREN D., Albuquerque, N. M.	1901
HOLMAN, RALPH H., 50 Congress St., Boston, Mass.	1907
HOLT, ERNEST G., Y. M. C. A., Montgomery, Ala.	1907
HONYWILL, ALBERT W., Jr., 53 Lake Place, New Haven, Conn.	1907
HORSFALL, BRUCE, 67 Wiggins St., Princeton, N. J.	1905
HOWARD, J. STANLEY, Box 52, Silver Lake Assembly, N. Y.	1904
HOWARD, OZORA WILLIAM, Box 1177, Los Angeles, Cal.	1898
HOWELL, BENJAMIN F., Jr., R. F. D. No. 1, Boonton, N. J.	1907
HOWE, CARLTON D., Essex Junction, Vt.	1901
HOWE, REGINALD HEBER, Jr., Middlesex School, Concord, Mass.	1895
HOWLAND, RANDOLPH H., 164 Wildwood Ave., Upper Montclair, N. J.	1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.	1907
HUBBARD, DR. LUCIUS L., Houghton, Mich.	1907
HUBBARD, MRS. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.	1891
HUBEL, FREDERICK C., Clarkston, Mich.	1903
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.	1895
HUNT, CHRESWELL J., 225 N. 53rd St., West Philadelphia, Pa.	1902
HUNTER, W. D., Box 208, Dallas, Texas.	1899
INGALLS, CHARLES E., East Templeton, Mass.	1885
INGERSOLL, ALBERT M., 832 5th St., San Diego, Cal.	1885
IRVING, JOHN, 550 Park Av., New York City.	1894
ISHAM, C. B., 30 E. 63d St., New York City.	1891
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.	1888
JAGER, H. J., 222 State Ave., Owatonna, Minn.	1904
JENNEY, CHARLES F., 35 Congress St., Boston, Mass.	1905
JOHNSON, FRANK EDGAR, 16 Amackasson Terrace, Yonkers, N. Y.	1888
JOHNSON, JAMES HOWARD, Bradford, N. H.	1894
JOHNSON, WALTER ADAMS, 18 Gramercy Park, New York City.	1898
JOHNSON, WILLIAM S., Boonville, N. Y.	1893
JONAS, MISS ANNA C., 383 Erskine St., Detroit, Mich.	1906
JORDAN, A. H. B., Everett, Wash.	1888
JUDD, ELMER T., Cando, N. D.	1895
JUDD, H. CORNELIUS, Bethel, Conn.	1906
JUDD, ROBERT S., Bethel, Conn.	1906
JUDSON, CLAY, 258 Knapp St., Milwaukee, Wis.	1906
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.	1899
KEIM, THOMAS DANIEL, 405 Radcliffe St.; Bristol, Pa.	1902
KELKER, WILLIAM A., Box 114, Harrisburg, Pa.	1896
KELLOGG, Prof. VERNON L., Stanford University, Cal.	1888
KENDALL, MISS BLANCHE, 20 Dudley St., Brookline, Mass.	1904
KENNARD, FREDERIC HEDGE, Dudley St., Newton Centre, Mass.	1892
KENT, EDWIN C., 90 West St., New York City.	1907
KERMODE, FRANCIS, Curator Provincial Museum, Victoria, B. C.	1904
KEYES, Prof. CHAS. R., Mt. Vernon, Ia.	1904
KIDDER, NATHANIEL T., Milton, Mass.	1906
KILGORE, WILLIAM, Jr., 2634 Fremont Ave. N., Minneapolis, Minn.	1906

KING, LE ROY, 20 E. 84th St., New York City.....	1901
KIRKHAM, Mrs. JAMES W., 275 Maple St., Springfield, Mass.....	1904
KIRKWOOD, FRANK C., Oldtown, Alleghany Co., Md.....	1892
KLUGH, A. B., 7 Wellington St., Kingston, Ont.....	1904
KNAEBEL, ERNEST, 1040 Josephine St., Denver, Colo.....	1906
KNAPP, Mrs. HENRY A., 301 Quincy Ave., Scranton, Pa.....	1905
KNOLHOFF, FERDINAND WILLIAM, 28 Winans St., East Orange, N. J.	1897
KOPMAN, HENRY HAZLITT, Biloxi, Miss.....	1899
KUTCHIN, Dr. VICTOR, Green Lake, Wis.....	1905
LACEY, HOWARD GEORGE, Kerrville, Texas.....	1899
DELAGERBERG, AXEL J., 70 Park Ave., Passaic, N. J.....	1907
LANG, HERBERT, Amer. Mus. Nat. Hist., New York City.....	1907
LANTZ, Prof. DAVID ERNEST, Dept. of Agriculture, Washington, D. C.	1885
LARRABEE, AUSTIN P., 630 Lytton Ave., Palo Alto, Cal.....	1902
LATIMER, Miss CAROLINE P., 19 Pierrepont St., Brooklyn, N. Y.....	1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Mt. Airy, Philadelphia, Pa.....	1902
LAW, J. EUGENE, Hollywood, Cal.....	1907
LAWRENCE, JOHN B., 126 E. 30th St., New York City.....	1907
LEE, Prof. LESLIE ALEXANDER, 3 Bath St., Brunswick, Me.....	1903
LELANDE, H. J., 1320 E. 15th St., Los Angeles, Cal.....	1907
LEVERING, THOMAS HENRY, Grant Road, Washington, D. C.....	1898
LEIBELSPERGER, WALTER H., Fleetwood, Pa.....	1907
LONG, WILLIAM B., 249 Tappan St., Brookline, Mass.....	1907
LOOMIS, JOHN A., Mereta, Texas.....	1887
LORD, Rev. WILLIAM R., Rockland, Mass.....	1901
LORING, J. ALDEN, Owego, New York.....	1889
LOWELL, HENRY H., 53 Glenwood Ave., Newton Centre, Mass.....	1907
LOW, ETHELBERT T., 38 E. 64th St., New York City.....	1907
LUM, EDWARD H., Chatham, N. J.....	1904
MACDOUGALL, GEORGE R., 131 W. 73rd St., New York City.....	1890
MACLAY, MARK W., Jr., 13 W. 31st St., New York City.....	1905
MADDOCK, Miss EMELINE, The Belgravia, Philadelphia, Pa.....	1897
MAHER, J. E., Windsor Locks, Conn.....	1902
MAITLAND, ROBERT L., 45 Broadway, New York City.....	1889
MARBLE, RICHARD M., 7 Keiffer St., Brookline, Mass.....	1907
MARCH, Prof. JOHN LEWIS, Union College, Schenectady, N. Y.....	1903
MARLEY, JOHN S., 4123 Oak St., Kansas City, Mo.....	1906
MARRS, Mrs. KINGSMILL, Saxonville, Mass.....	1903
MARSDEN, H. W., Witch Creek, Cal.....	1904
MARSH, DANIEL J., Five Cent Savings Bank, Springfield, Mass.....	1894
MARTIN, Miss MARIA ROSS, College Ave., New Brunswick, N. J.....	1902
MARX, EDWARD J. F., 8 Chestnut Terrace, Easton, Pa.....	1907
MAXON, WILLIAM R., U. S. Nat. Mus., Washington, D. C.....	1906
MCATEE, WALDO LEE, Dept. of Agriculture, Washington, D. C.....	1903
McCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....	1900
McCONNELL, HARRY B., Box 77, Cadiz, O.....	1904

McCOOK, PHILIP JAMES, 15 William St., New York City.....	1895
McEWEN, DANIEL C., 160 Stirling Pl., Brooklyn, N. Y.....	1901
McHATTON, DR. HENRY, Macon, Ga.....	1898
McILHENNY, EDWARD AVERY, Avery Island, La.....	1894
McKECHNIE, FREDERICK BRIDGHAM, Ponkapog, Mass.....	1900
McLAIN, ROBERT BAIRD, Market and 12th Sts., Wheeling, W. Va.....	1893
McMILLAN, MRS. GILBERT, Gorham, N. H.....	1902
MCNEIL, MISS EMILY, Cromwell Hall, Cromwell, Conn.....	1905
MEAD, MRS. E. M., 2465 Broadway, New York City.....	1904
MEEKER, JESSE C. A., Box 163, Danbury, Conn.....	1899
MERRIAM, HENRY F., 94 New England Ave., Summit, N. J.....	1905
MERRILL, HARRY, Bangor, Maine.....	1883
MERSHON, W. B., Saginaw, Mich.....	1905
METZ, CHARLES W., Box 285, Claremont, Cal.....	1907
MILLER, JAMES HENRY, Lowville, N. Y.....	1904
MILLS, HARRY C., Box 218, Unionville, Conn.....	1897
MILLS, PROF. WILLIAM C., Ohio State Univ., Columbus, O.....	1900
MITCHELL, DR. WALTON I., 321 Barnes Bldg., Wichita, Kans.....	1893
MONTGOMERY, THOMAS H., JR., Univ. of Texas, Austin, Texas.....	1899
MOORE, CLEMENT, 107 Euclid Ave., Hackensack, N. J.....	1906
MOORE, MISS ELIZ. PUTNAM, Kent, Conn.....	1905
MOORE, ROBERT THOMAS, W. Main St., Haddonfield, N. J.....	1898
MORCOM, G. FREAN, 1815 N. Raymond Ave., Pasadena, Cal.....	1886
MORGAN, ALBERT, Hartford Fire Ins. Co., Hartford, Conn.....	1903
MORGAN, T. A., 316 High St., Morgantown, W. Va.....	1906
MORSE, MISS MARGARET, Clark University, Worcester, Mass.....	1907
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose, Mass.....	1905
MURPHEY, DR. EUGENE E., 444 Tellfair St., Augusta, Ga.....	1903
MURPHY, ROBERT C., Amer. Mus. Nat. Hist., N. Y. City.....	1905
MYERS, MRS. HARRIET W., 306 Ave. 66, Los Angeles, Cal.....	1906
MYERS, MISS LUCY F., "Brookside," Poughkeepsie, N. Y.....	1898
NASH, CHAUNCEY C., 245 Newbury St., Boston, Mass.....	1906
NASH, C. W., 94 Lee Ave., Toronto, Ont.....	1906
NASH, HERMAN W., Box 264, Pueblo, Colo.....	1892
NASH, NATHANIEL C., JR., Hastings 36, Cambridge, Mass.....	1907
NELSON, JAMES ALLEN, 210 Mitchell St., Ithaca, N. Y.....	1898
NEWMAN, REV. STEPHEN M., 619 Colorado Bldg., Washington, D. C.....	1898
NICHOLS, JOHN M., 46 Spruce St., Portland, Me.....	1890
NICHOLS, JOHN TREADWELL, 42 W. 11th St., New York City.....	1901
NOLTE, REV. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, J. PARKER, JR., 2122 Pine St., Philadelphia, Pa.....	1904
NORRIS, ROY C., 725 N. 10th St., Richmond, Ind.....	1904
NOWELL, JOHN ROWLAND, Box 979, Schenectady, N. Y.....	1897
NOYES, MRS. HARRY A., Hyde Park, Vt.....	1905
O'CONNOR, HALDEMAN, 25 N. Front St., Harrisburg, Pa.....	1896
OGDEN, DR. HENRY Vining, 141 Wisconsin St., Milwaukee, Wis.....	1897

OLDYS, HENRY, Dept. of Agriculture, Washington, D. C.	1896
OLIVER, Dr. HENRY KEMBLE, 2 Newbury St., Boston, Mass.	1900
OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.	1897
PAINE, AUGUSTUS G., Jr., 126 E. 39th St., New York City	1886
PANGBURN, CLIFFORD H., 731 Elm St., New Haven, Conn.	1907
PARKER, Hon. HERBERT, S. Lancaster, Mass.	1904
PATTEN, Mrs. JOHN D., 2212 R St., Washington, D. C.	1900
PEABODY, Rev. P. B., Blue Rapids, Kans.	1903
PEARSE, THEED, Crozet, Va.	1907
PEARSON, LEONARD S., 132 Beechtree Lane, Wayne, Pa.	1907
PEAVY, ROBERT W., 791 Coney Island Ave., Brooklyn, N. Y.	1903
PECK, HENRY O., 62 Pomeroy Ave., Pittsfield, Mass.	1904
PEET, MAX M., Alpha Kappa Kappa House, 1001 Huron St., Ann Arbor, Mich.	1907
PERRY, Dr. ELTON, 610 Baylor St., Austin, Tex.	1902
PETERS, JAMES LEE, Walnut Ave., Jamaica Plain, Mass.	1904
PETERSON, Dr. CYRUS A., 347 Church Ave., Webster Groves Sta., St. Louis, Mo.	1904
PETTIS, Miss GRACE L., Science Museum, Springfield, Mass.	1903
PHELPS, Mrs. J. W., Box 36, Northfield, Mass.	1899
PHILIPP, PHILIP B., 327 Central Park, West, New York City	1907
PHILLIPS, ALEXANDER H., Princeton, N. J.	1891
PHILLIPS, JOHN CHARLES, 299 Berkeley St., Boston, Mass.	1904
PHILLIPS, SHERMAN E., Canterbury, N. H.	1904
PIERCE, A. K., Renovo, Pa.	1891
PIPER, STANLEY E., Biological Survey, Washington, D. C.	1906
PITCAIRN, WILLIAM G., 3330 Perrysville Ave., Allegheny, Pa.	1906
POE, Miss MARGARETTA, 1500 Park Ave., Baltimore, Md.	1899
POLLOCK, ADELAIDE L., Queen Anne School, Seattle, Wash.	1906
POMEROY, HARRY KIRKLAND, Box 575, Kalamazoo, Mich.	1894
POOLE, Miss GRACE L., 22 School St., Rockland, Mass.	1906
PORTER, LOUIS H., Stamford, Conn.	1893
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.	1892
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.	1906
PURDY, JAMES B., R. F. D. No. 4, Plymouth, Mich.	1893
RADCLIFFE, Mrs. WALLACE, 1200 K St. N. W., Washington, D. C.	1905
RALPH, JAMES R., 205 S. 7th St., Minneapolis, Minn.	1906
RANN, Mrs. MARY L., Manchester, Iowa.	1893
RAUB, Dr. M. W., 340 W. King St., Lancaster, Pa.	1890
RAWLE, FRANCIS W., Lock Box 51, Bryn Mawr, Pa.	1907
RAWSON, CALVIN LUTHER, Box 33, Norwich, Conn.	1885
READ, ALBERT M., 1140 15th St. N. W., Washington, D. C.	1895
REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.	1896
REDFIELD, ALFRED C., Wayne, Pa.	1907
REDFIELD, Miss ELISA WHITNEY, 29 Everett St., Cambridge, Mass.	1897
REDINGTON, ALFRED POETT, Box 66, Santa Barbara, Cal.	1890

REED, CHESTER A., 75 Thomas St., Worcester, Mass.....	1904
REED, Miss EMILY E., 12 Louisburg Sq., Boston, Mass.....	1904
REED, HUGH DANIEL, 804 E. Seneca St., Ithaca, N. Y.....	1900
REED, Mrs. WILLIAM HOWELL, Belmont, Mass.....	1904
REHN, JAMES A. G., Acad. Nat. Sciences, Philadelphia, Pa.....	1901
REMICK, J. A., Jr., 300 Marlboro St., Boston, Mass.....	1905
RHOADS, CHARLES J., Bryn Mawr, Pa.....	1895
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass.....	1900
RICHARDSON, C. H., Jr., 46 N. Wilson Ave., Pasadena, Cal.....	1903
RICHARDSON, JOHN KENDALL, Wellesley Hills, Mass.....	1896
RIDGWAY, JOHN L., Chevy Chase, Md.....	1890
RIKER, CLARENCE B., Maplewood, N. J.....	1885
ROBERTS, JOHN T., JR., 350 Main St., Buffalo, N. Y.....	1906
ROBERTS, WILLIAM ELY, George School, Bucks Co., Pa.....	1902
ROBINSON, ANTHONY W., 409 Chestnut St., Philadelphia, Pa.....	1903
RODDY, Prof. H. JUSTIN, State Normal School, Millersville, Pa.....	1891
ROE, CHARLES M., 1630 Chestnut St., Philadelphia, Pa.....	1906
ROGERS, CHARLES H., 109 Patton Hall, Princeton, N. J.....	1904
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....	1896
ROSS, GEORGE H., 23 West St., Rutland, Vt.....	1904
ROWLEY JOHN, 505 Everett Ave., Palo Alto, Cal.....	1889
SABINE, GEORGE K., 30 Irving St., Brookline, Mass.....	1903
SAGE, HENRY M., Menands Road, Albany, N. Y.....	1885
SALLEY, FITZHUGH, Holly Hill, S. C.....	1907
SAMPSON, WALTER BEHRNARD, care A. Hatt Whse & Lumber Co., Napa, Cal.....	1897
SANDS, AUSTIN LEDYARD, Greenough Place, Newport, R. I.....	1902
SANFORD, GEORGE ALDEN, 215 W. 23rd St., N. Y. City.....	1906
SANFORD, HARRISON, 65 W. 50th St., New York City.....	1905
SANFORD, Dr. LEONARD C., 216 Crown St., New Haven, Conn.....	1902
SANTENS, JOSEPH A., Carnegie Museum, Pittsburgh, Pa.....	1907
SASS, HERBERT RAVENEL, The Charleston Museum, Charleston, S. C.....	1906
SATTERTHWAIT, A. F., Office of State Zoölogist, Harrisburg, Pa.....	1907
SAUNDERS, ARETAS A., 125 Maple St., New Haven, Conn.....	1907
SAVAGE, WALTER GILES, Monteer, Mo.....	1898
SCHANTZ, ORPHEUS M., Morton Park, Ill.....	1907
SCHMUCKER, Dr. S. C., Rosedale Ave., West Chester, Pa.....	1903
SCHUMACHER, BOWEN W., 510 Laurel Ave., Highland Park, Ill.....	1906
SCHWARZ, FRANK, 1520 Lafayette Ave., St. Louis, Mo.....	1904
SCOVILLE, SAMUEL, Jr., 118 S. 41st St., Philadelphia, Pa.....	1907
SEABURY, JOSEPH S., Wellesley Hills, Mass.....	1906
SEISS, COVINGTON FEW, 1338 Spring Garden St., Philadelphia, Pa.....	1898
SHARPLES, ROBERT P., West Chester, Pa.....	1907
SHATTUCK, EDWIN HAROLD, Box 48, Granby, Conn.....	1898
SHAW, HOLTON A., 610 4th Ave., Grand Forks, N. Dakota.....	1898
SHEARER, AMON R., Mont Belvieu, Tex.....	1905

SHERMAN, Miss ALTHEA R., National, Iowa.....	1907
SHIRAS, GEORGE, 3d, Stoneleigh Court, Washington, D. C.....	1907
SHOEMAKER, FRANK H., 2960 Dewey Ave., Omaha, Neb.....	1895
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SHUMWAY, GEORGE, Galesburg, Ill.....	1906
SILLIMAN, HARPER, 562 5th Ave., New York City.....	1902
SMITH, BYRON L., 2140 Prairie Ave., Chicago, Ill.....	1906
SMITH, REV. FRANCIS CURTIS, Boonville, N. Y.....	1903
SMITH, G. WASHBOURNE, 97 Nassau St., N. Y. City.....	1906
SMITH, HORACE G., Capitol Bldg., Denver, Colo.....	1888
SMITH, DR. HUGH M., 1209 M St. N. W., Washington, D. C.....	1886
SMITH, JESSE L., 219 Central Ave., Highland Park, Ill.....	1907
SMITH, LOUIS IRVIN, Jr., 3809 Chestnut St., Philadelphia, Pa.....	1901
SMITH, N. A. C., Wellesley Hills, Mass.....	1907
SMITH, PHILO W., Jr., Box 285, Eureka Springs, Ark.....	1903
SMYTH, PROF. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va.....	1892
SNOW, PROF. FRANCIS H., Univ. of Kansas, Lawrence, Kan.....	1903
SNYDER, WILL EDWIN, 109 E. Mackie St., Beaver Dam, Wis.....	1895
SPAULDING, FRED B., Lancaster, N. H.....	1894
SPINNEY, HERBERT L., Seguin Light Station, Popham Beach, Me.....	1900
STANTON, PROF. J. Y., 410 Main St., Lewiston, Me.....	1883
STEBBINS, Miss FANNIE A., 480 Union St., Springfield, Mass.....	1903
STEELE, JOHN H., 4010 Spruce St., West Philadelphia, Pa.....	1906
STEVENS, CAROLINE M., 52 Bowdoin St., Portland, Me.....	1906
STILES, EDGAR C., 145 Centre St., West Haven, Conn.....	1907
STONE, CLARENCE F., Branchport, N. Y.....	1903
STRATTON-PORTER, MRS. GENE, Limberlost Cabin, Geneva, Ind.....	1906
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
STYER, MRS. KATHARINE R., Concordville, Pa.....	1903
SURFACE, PROF. HARVEY ADAM, State Zoölogist, Harrisburg, Pa.....	1897
SWAIM, LORING T., 190 Brattle St., Cambridge, Mass.....	1905
SWAIN, JOHN MERTON, Farmington, Me.....	1899
SWALES, BRADSHAW HALL, Grosse Isle, Mich.....	1902
SWARTH, HARRY S., 356 Belden Ave., Chicago, Ill.....	1900
SWENK, MYRON H., 351 N. 28th St., Lincoln, Neb.....	1904
SWEZEE, GEORGE, 61 Polk St., Newark, N. J.....	1901
SWIFT, CARLETON B., St. Mark's School, Southborough, Mass.....	1907
TAVERNER, PERCY A., 55 Elmhurst, Highland Park, Mich.....	1902
TAYLOR, ALEXANDER R., 1205 Gervais St., Columbia, S. C.....	1907
TAYLOR, ALEXANDER O'DRISCOLL, 132 Bellevue Ave., Newport, R. I.....	1888
TERRILL, LEWIS McI., 352 Elm Ave., Westmount, Quebec.....	1907
TEST, CHARLES DARWIN, Golden, Colo.....	1906
TEST, DR. FREDERICK CLEVELAND, 4318 Grand Boulevard Chicago, Ill.....	1892
THOMAS, Miss EMILY HINDS, The Aldine Hotel, Chestnut St., Philadelphia, Pa.....	1901

THOMPSON, Miss CAROLINE BURLING, 195 Weston Road, Wellesley, Mass.....	1900
THOMPSON, DR. MILLETT T., Clark University, Worcester, Mass.....	1904
THOMPSON, ROY, Cando, N. D.....	1905
TINKER, ALMERIN D., 631 S. 12th St., Ann Arbor, Mich.....	1907
TOPPAN, GEORGE L., 723 11th St. N. W., Washington, D. C.....	1886
TOWNSEND, WILMOT, 272 75th St., Brooklyn, N. Y.....	1894
TREGANZA, A. O., 610 Utah Saving's & Trust Bldg., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TRUMBULL, J. H., Plainville, Conn.....	1907
TUCKER, Dr. HENRY, 2000 Pine St., Philadelphia, Pa.....	1907
TUDBURY, WARREN C., 509 High St., Easton, Pa.....	1903
TUFTS, LE ROY MELVILLE, "Thrushwood." Farmington, Me.....	1903
TUTTLE, DR. CARL, Berlin Heights, Ohio.....	1890
TWEEDY, EDGAR, 142 Deer Hill Ave., Danbury, Conn.....	1902
UNDERWOOD, WILLIAM LYMAN, Mass. Inst. Technology, Boston, Mass.....	1900
UPHAM, Mrs. WILLIAM H., Marshfield, Wis.....	1907
VALENTINE, Miss ANNA J., Bellefonte, Pa.....	1905
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....	1885
VAN NAME, WILLARD GIBBS, 121 High St., New Haven, Conn.....	1900
VAN NORDEN, WARNER MONTAGNIE, Jay Mansion, Harrison, N. Y.....	1899
VAN SANT, Miss ELIZABETH, 2960 Dewey Ave., Omaha, Neb.....	1896
VANTASSELL, F. L., 116 High St., Passaic, N. J.....	1907
VARICK, Mrs. WILLIAM REMSEN, 1015 Chestnut St., Manchester, N. H.....	1900
VETTER, Dr. CHARLES, 50 Central Park West, New York City.....	1898
VISHER, STEPHEN S., Forestburg, S. Dakota.....	1904
VOLKMAN, JULIUS T., Webster Grove, Mo.....	1906
VON LENGERKE, JUSTUS, 349 Fifth Ave., New York City.....	1907
WADSWORTH, CLARENCE S., Box 883, Middletown, Conn.....	1906
WALES, EDWARD H., Hyde Park, N. Y.....	1896
WALKER, DR. R. L., 355 Main Ave., Carnegie, Pa.....	1888
WALLACE, DR. A. H., 204 Bellevue Ave., Upper Montclair, N. J.....	1907
WALLACE, JAMES S., 69 Front St., Toronto, Ontario.....	1907
WALLINGSFORD, LEO, 216 E. Crippen St., Cadillac, Mich.....	1904
WALTER, HERBERT E., Dr., 53 Arlington Ave., Providence, R. I.....	1901
WALTERS, FRANK, South Sandisfield, Mass.....	1902
WARD, HENRY L., 882 Hackett Ave., Milwaukee, Wis.....	1906
WARREN, DR. B. H., 236 W. Market St., West Chester, Pa.....	1885
WARREN, EDWARD ROYAL, 20 W. Caramillo St., Colorado Springs, Colo .....	1902
WATSON, GALEN, North Scituate, Mass.....	1907
WATSON, Miss SARAH R., West Horter and Wayne Sts., Germantown, Philadelphia, Pa.....	1900
WEBER, J. A., 70 W. 106th St., New York City.....	1907

WEIR, J. ALDEN, 11 E. 12th St., New York City . . . . .	1899
WELLS, FRANK S., 916 Grant Ave., Plainfield, N. J. . . . .	1902
WENTWORTH, IRVING H., 4a Calle de Hidalgo No. 9, Saltillo, Coahuila, Mexico . . . . .	1900
WEST, LEWIS H., Roslyn, N. Y. . . . .	1887
WESTON, FRANCIS M., Jr., care P. G. Porcher, Mt. Pleasant, S. C. . . . .	1907
WETMORE, Mrs. EDMUND, 343 Lexington Ave., New York City . . . . .	1902
WEYGANDT, CORNELIUS, Wissahickon Ave. below Westview St., Germantown, Philadelphia, Pa. . . . .	1907
WHARTON, WILLIAM R., Groton, Mass. . . . .	1907
WHEELER, EDMUND JACOB, 177 Pequot Ave., New London, Conn. . . . .	1898
WHEELER, JOHN B., East Templeton, Mass. . . . .	1897
WHEELOCK, Mrs. IRENE G., 1040 Hinman Ave., Evanston, Ill. . . . .	1902
WHITCOMB, Mrs. HENRY F., Amherst, Mass. . . . .	1897
WHITE, FRANCIS BEACH, 6 Phillips Place, Cambridge, Mass. . . . .	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Ont. . . . .	1903
WHITE, W. A., 130 Water St., New York City . . . . .	1902
WICKERSHAM, CORNELIUS W., Hastings 2, Cambridge, Mass. . . . .	1902
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y. . . . .	1895
WILCOX, Dr. EMMA D., 307 W. 98th St., New York City . . . . .	1905
WILCOX, T. FERDINAND, 115 W. 75th St., New York City . . . . .	1895
WILDE, MARK L. C., 311 N. 5th St., Camden, N. J. . . . .	1893
WILLARD, BERTEL G., Box 107, Millis, MASS. . . . .	1906
WILLIAMS, J. BICKERTON, Biological Museum, Queen's Park, Toronto, Ontario . . . . .	1889
WILLIAMS, RICHARD FERDINAND, Box 521, New York City . . . . .	1902
WILLIAMS, ROBERT S., New York Botanical Gardens, Bronx Park, New York City . . . . .	1888
WILLIAMS, ROBERT W., Jr., Biological Survey, Washington, D. C. . . . .	1900
WILLIAMSON, E. B., Bluffton, Ind. . . . .	1900
WILSON, SIDNEY S., German American Bank Bldg., St. Joseph, Mo. . . . .	1895
WISLER, J. JAY, 231 Cherry St., Columbia, Pa. . . . .	1903
WISTER, WILLIAM ROTCH, 505 Chestnut St., Philadelphia, Pa. . . . .	1904
WITHERBEE, Mrs. F. B., 106 Berkeley St., West Newton, Mass. . . . .	1906
WOOD, J. CLAIRE, 179 17th St., Detroit, Mich. . . . .	1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C. . . . .	1895
WOOD, NORMAN A., 1216 S. University Ave., Ann Arbor, Mich. . . . .	1904
WOOD, S. T., 229 Beverley St., Toronto, Ont. . . . .	1904
WOODCOCK, ARTHUR ROY, Corvallis, Oregon . . . . .	1901
WOODRUFF, EDWARD SEYMOUR, Forest, Fish & Game Com., Albany, N. Y. . . . .	1899
WOODRUFF, FRANK M., Acad. Sciences, Chicago, Ill. . . . .	1904
WOODRUFF, LEWIS B., 14 E. 68th St., New York City . . . . .	1886
WOODWORTH, Mrs. NELLY HART, 41 Bank St., St. Albans, Vt. . . . .	1894
WORTHEN, CHARLES K., Box 103, Warsaw, Ill. . . . .	1891
WORTHINGTON, WILLIS W., Shelter Island Heights, N. Y. . . . .	1889

WRIGHT, ALBERT H., 804 E. Seneca St., Ithaca, N. Y.	1906
WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.	1907
WRIGHT, HORACE WINSLOW, 82 Myrtle St., Boston, Mass.	1902
WRIGHT, HOWARD W., 830 N. Orange Grove Ave., Pasadena, Cal.	1907
WRIGHT, SAMUEL, Conshohocken, Pa.	1895
WYMAN, LUTHER E., 1959 Washington Boulevard, Chicago, Ill.	1907
YOUNG, JOHN A., 233 W. 23d St., New York City.	1907
YOUNG, Mrs. WILLIAM A., 54 Temple St., West Newton, Mass.	1907
ZAPPEY, WALTER R., 19 Norfolk St., Roslindale, Mass.	1905
ZERRAHN, CARL OTTO, 106 Centre St., Milton, Mass.	1904

## DECEASED MEMBERS.

## FELLOWS.

	<i>Date of Death.</i>
BAIRD, SPENCER FULLERTON	Aug. 19, 1897
BENDIRE, CHARLES E.	Feb. 4, 1897
COUES, ELLIOTT	Dec. 25, 1899
GOSS, N. S.	March 10, 1889
HOLDER, JOSEPH B.	Feb. 28, 1888
JEFFRIES, JOHN AMORY	March 26, 1892
MCILWAITH, THOMAS	Jan. 31, 1903
MERRILL, JAMES C.	Oct. 27, 1902
SENNETT, GEORGE BURRITT	March 18, 1900
TRUMBULL, GURDON	Dec. 28, 1903
WHEATON, JOHN M.	Jan. 28, 1887

## HONORARY FELLOWS.

BLANFORD, WILLIAM T.	June 23, 1905
BURMEISTER, HERMANN	May 1, 1892
CABANIS, JEAN	Feb. 20, 1906
GÄTKE, HEINRICH	Jan. 1, 1897
GUNDLACH, JUAN	March 14, 1896
GURNEY, JOHN HENRY	April 20, 1890
HARTLAUB, GUSTAV	Nov. 20, 1900
HUXLEY, THOMAS H.	June 29, 1895
KRAUS, FERDINAND	Sept. 15, 1890
LAWRENCE, GEORGE N.	Jan. 17, 1895
MILNE-EDWARDS, ALPHONSE	April 21, 1900
NEWTON, ALFRED	June 7, 1907

PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SEEBOHM, HENRY.....	Nov. 26, 1895
TACZANOWSKI, LADISLAS.....	Jan. 17, 1890

## CORRESPONDING FELLOWS.

ALTUM, C. A.....	Jan. 1, 1900
ANDERSON, JOHN.....	Aug. 16, 1900
BALDAMUS, EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS W.....	Oct. 15, 1891
BLASIUS, RUDOLPH.....	Sept. 21, 1907
BOGDANOW, MODEST N.....	March 4, 1888
BRYANT, WALTER, E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
COOPER, JAMES G.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
FATIO, VICTOR.....	March 19, 1906
HAAST, JULIUS VON.....	Aug. 15, 1887
HARGITT, EDWARD.....	March 19, 1895
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, E. F. VON.....	May 31, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LYTTELTON, THOMAS, LORD LILFORD.....	June 17, 1896
MARSCHALL, A. F.....	Oct. 11, 1887
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MIDDENDORFF, ALEXANDER THEODORE VON.....	Jan. 28, 1894
MOSJISOVICS, F. G. HERMANN AUGUST.....	Aug. 27, 1897
OUSTALET, EMILE.....	Oct. 23, 1905
PHILIPPI, R. A.....	Aug. — 1904
PREJEVALSKI, N. M.....	Oct. 20, 1887
PRENTISS, D. WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND.....	— 1903
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLEY-SLONGCHAMPS, EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, N.....	Feb. 8, 1885
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, H. B.....	March 8, 1906

WHARTON, HENRY T.....	Sept. —, 1895
WOODHOUSE, SAMUEL W.....	Oct. 23, 1904

## MEMBERS.

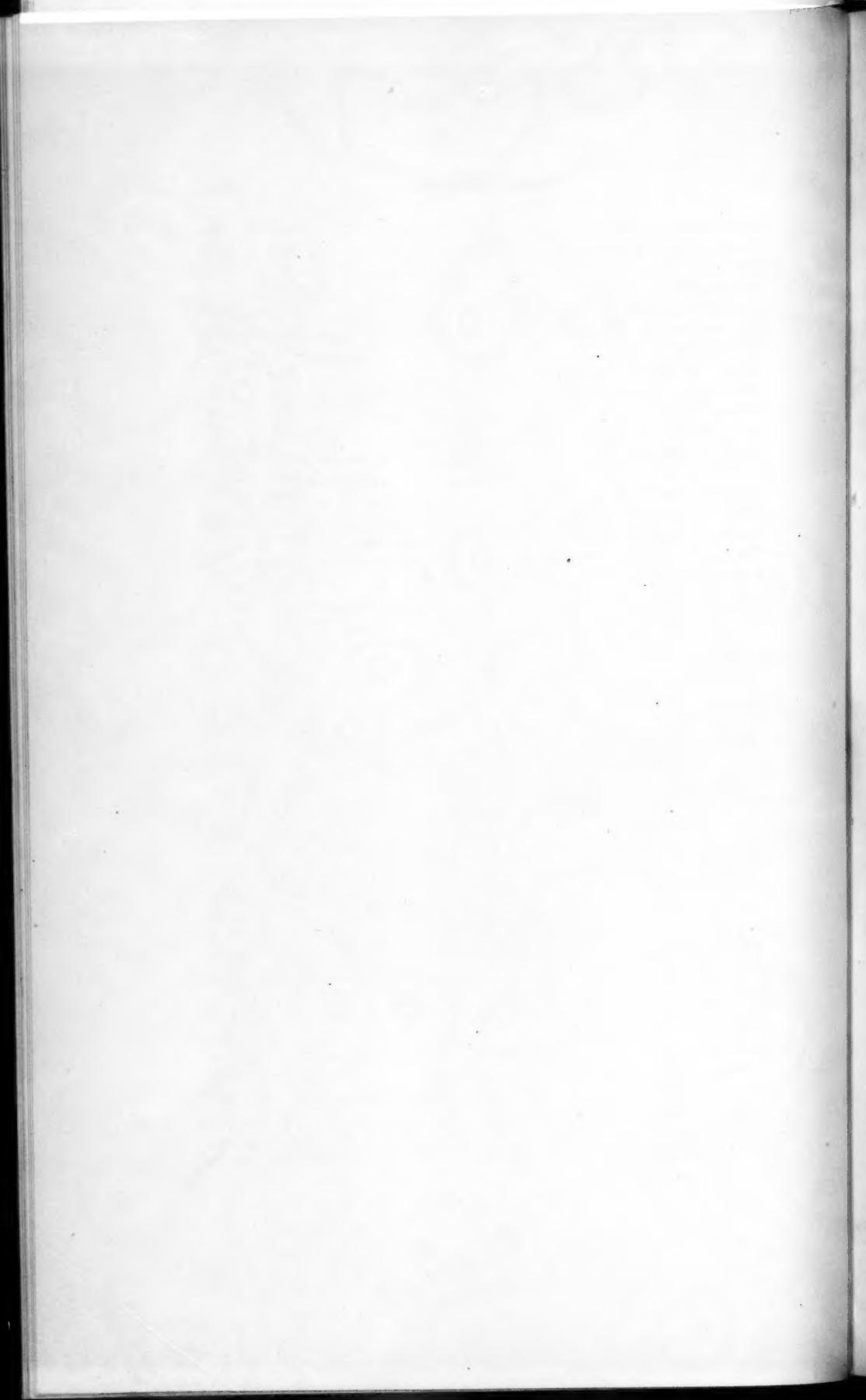
FANNIN, JOHN.....	June 20, 1904
JUDD, SYLVESTER D.....	Oct. 22, 1905
RALPH, WILLIAM LEGRANGE.....	July 8, 1907

## ASSOCIATES.

ADAMS, CHARLES F.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK T.....	Feb. 6, 1907
ATKINS, H. A.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, CHARLES E.....	—, 1905
BARLOW, CHESTER.....	Nov. 6, 1902
BAUR, GEORGE.....	June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BILL, CHARLES.....	April —, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 29, 1901
BOARDMAN, GEORGE A.....	Jan. 11, 1901
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER H.....	Jan. 5, 1900
BREESE, WILLIAM L.....	Dec. 7, 1889
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, L. W.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BURNETT, LEONARD E.....	March 16, 1904
CAIRNS, JOHN S.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, J. B.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARTER, EDWIN.....	— 1900
CARTER, ISABEL PADDOCK.....	Sept. 15, 1907
CLARK, JOHN N.....	Jan. 13, 1903
COLBURN, W. W.....	Oct. 17, 1899
COLLETT, ALONSO M.....	Aug. 22, 1902
CORNING, ERASTUS, Jr.....	April 9, 1893

COE, W. W.....	April 26, 1885
DAFFIN, WM. H.....	April 21, 1902
DAKIN, JOHN A.....	Feb. 21, 1900
DAVIS, WALTER R.....	April 8, 1907
DEXTER, NEWTON.....	July 27, 1901
ELLIOTT, S. LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FOWLER, J. L.....	July 11, 1899
FULLER, CHARLES ANTHONY.....	Mar. 16, 1906
GESNER, A. H.....	April 30, 1895
GOSS, BENJAMIN F.....	July 6, 1893
HATCHÉ, JESSE MAURICE.....	May 1, 1898
HOADLEY, FREDERIC H.....	Feb. 26, 1895
HOLMES, LARUE KLINGLE.....	May 10, 1906
HOOPES, JOSIAH.....	Jan. 16, 1904
HOWLAND, JOHN SNOWDON.....	Sept. 19, 1885
INGERSOLL, JOSEPH CARLETON.....	Oct. 2, 1898
JENKS, JOHN W. P.....	Sept. 27, 1894
JESURUN, MORTIMER.....	March —, 1905
JOUY, PIERRE LOUIS.....	March 22, 1894
KNIGHT, WILBUR CLINTON.....	July 8, 1903
KNOX, JOHN C.....	July 9, 1904
KNOX, JOHN COWING.....	June 1, 1904
KOCH, AUGUST.....	Feb. 15, 1907
KUMLIEN, LUDWIG.....	Dec. 4, 1902
KUMLIEN, THURE.....	Aug. 5, 1888
LAWRENCE, ROBERT HOE.....	April 27, 1897
LINDEN, CHARLES.....	Feb. 3, 1888
LLOYD, ANDREW JAMES.....	June 14, 1906
MABBETT, GIDEON.....	Aug. 15, 1900
MAITLAND, ALEXANDER.....	Oct. 25, 1907
MARBLE, CHARLES C.....	Sept. 25, 1900
MARCY, OLIVER.....	March 19, 1899
MARIS, WILLARD LORRAINE.....	Dec. 11, 1895
MCKINLAY, JAMES.....	Nov. 1, 1899
MEAD, GEORGE S.....	June 19, 1901
MINOT, HENRY DAVIS.....	Nov. 13, 1890
MORRELL, CLARENCE HENRY.....	July 15, 1902
NICHOLS, HOWARD GARDNER.....	June 23, 1896
NIMS, LEE.....	March 12, 1903
NORTHROP, JOHN I.....	June 26, 1891
PARK, AUSTIN F.....	Sept. 22, 1893
PAULMIER, FREDERICK CLARK.....	March 3, 1906
POMROY, GRACE V.....	May 14, 1906
RAGSDALE, GEORGE H.....	March 25, 1895
READY, GEORGE H.....	March 20, 1903

RICHARDSON, JENNESS.....	June 24, 1893
ROBINS, Mrs. EDWARD.....	July 2, 1906
SAND, ISABELLA LOW.....	April 20, 1906
SELOUS, PERCY SHERBORN.....	April 7, 1900
SLATER, JAMES H.....	Feb. —, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR A.....	April 24, 1884
SMITH, CLARENCE ALBERT.....	May 6, 1896
SOUTHWICK, JAMES M.....	June 3, 1904
STOWE, W. H.....	March —, 1895
SWEIGER, Mrs. J. L.....	March 23, 1907
THORNE, PLATTE M.....	March 16, 1897
THURBER, E. C.....	Sept. 6, 1896
VENNOR, HENRY G.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 26, 1902
WILLARD, SAMUEL WELLS.....	May 24, 1887
WOOD, WILLIAM.....	Aug. 9, 1885
YOUNG, CURTIS C.....	July 30, 1902



# THE AUK:

A QUARTERLY JOURNAL OF  
ORNITHOLOGY.

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VOL. XXV.

JANUARY, 1908.

No. 1.

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## A LONG-DRAWN-OUT MIGRATION: ITS CAUSES AND CONSEQUENCES.

BY REV. G. EIFRIG.

THE migration of birds in the spring of 1907 at Ottawa, Ontario, and vicinity, was a remarkable one from several points of view. And in the hope of being able to help to shed a little light on this fascinating and at the same time mysterious natural phenomenon of bird migration, and to stimulate others to better efforts in this direction, this present article is written.

It was a long-drawn-out migration. The first migrant here, *Otocoris alpestris praticola*, came February 10, in small numbers to the Dominion rifle range near here, where 1800 sheep had been pastured in the open all winter. The last transient migrant observed by the writer was a Black-poll Warbler, June 12. Usually the former comes here, or rather is seen, about February 20, and the latter leaves the first two or three days in June. Anyone will admit that from February 10 to June 12 is quite a long migration period for almost anywhere in the northern hemisphere. But it is not so much the greater length of time, but rather the anomalies occurring *within* the time specified above, that made the last migration here seem a long-drawn-out one. After the arrival of the first two comers from the south, the Prairie Horned Lark and the Crow, the latter arriving about the last week of February or the first of March, there is usually a lull in the migration until March 20-24, when the second batch of migrants puts in an appearance in the shape of the Song Sparrows, Robins, Bluebirds, Red-winged Blackbirds, Bronzed Grackles, Juncos, Purple Finches and Cedar-birds. There seems to be a keen rivalry between some of these

hardy pioneers into the wintry conditions then still prevailing here, for some years the one, other years the other will be first. This year, however, some of these birds came very considerably earlier than this. The cheerful Song Sparrow came March 13, as compared with April 2 of the preceding year, and March 18 of 1905; the Robin respectively, March 16, March 31, March 19; the Bluebird, March 21, April 3, March 24; the Bronzed Grackle, March 23, April 2, March 27; the Red-winged Blackbird, March 23, April 2, March 24. At the same time there was nothing discernible here and in this whole part of Canada, that could be supposed to have induced any birds to come earlier. In February we had had severe winter weather, more so than is usual in that month, and March did not show much letting-up of this. The explanation the writer arrived at, is the following: For several days before the arrival of the Song Sparrow and the others given above, there had been a spell of phenomenally warm weather to the south of us, in the latitude of New York, Washington, Chicago, St. Louis, etc. For many years no such warm weather had been recorded at New York and Washington. This must have had the effect of attracting more hosts of migrants into this latitude, than would have been the case under normal conditions. This in turn must have uncomfortably crowded the bird population already there and made the food supply, not too abundant at that time of the year, rather scarce. These two conditions, or either one alone, would, to my mind, have the effect of urging the hardiest of the birds there, those that would have turned northward first at any rate, even if normally some days later, to do so several days earlier than they would otherwise have done, and thus we had the strange spectacle of seeing and hearing Song Sparrows, Robins, etc., when there were real winter conditions here, much snow, ice, and cold. But right here several exceptions must be noted. The Purple Finch and the Cedar-bird, usually among the first of this batch of migrants, came this year not only not earlier, but very much later than usually. The former came only April 27 and then not nearly in its usual abundance, and the latter even not before June 7, but then as abundant as ever.

Then arrived the usual next-comers, the Tree Swallow, Meadowlark, Flicker, several of the ducks, the Killdeer, the Phoebe, Marsh

Hawk; in April the Kingfisher, the Savanna and White-throated Sparrows, the Hermit Thrush, etc. But these came in lesser numbers, at greater intervals, less noticeably, than in other years. Then came a standstill, a lull in the migration, and that was prolonged, painfully and ominously prolonged, far into May. The usual April weather gave way to colder weather again, and instead of this being vanquished by May, it only became more pronounced. On May 4 there was an uproarious snowstorm, leaving six inches of snow, some of which remained till the 7th. And the cold weather stayed with us throughout May; now and then there were light snow flurries, as on the 28th, which appeared like a typical raw, blustering April day. Nor were we, in this part of Canada, the only sufferers from these untoward weather conditions; they extended over half of northeastern America. In Washington it was the coldest May for 36 years, and during a trip the writer had occasion to make in the middle of May, he found the same conditions as here, at Detroit, Ft. Wayne, Ind., and nearly as bad at St. Louis, where the unusual spectacle could be had of seeing people in furs and overcoats in the middle of May. As a consequence vegetable life remained at a standstill practically for four to five weeks. The leaf buds on the trees did not open, the trees were bare here throughout May, or very nearly so.

The effect of all this on the migration of birds was simply disastrous. It not only delayed most species considerably, but it scattered their bands, it decreased their numbers and caused a deplorable mortality among certain species.—First, as to the delayment in the coming of many species. From the appended comparative list can be seen, that after April 28 till May 9, there was only one new species recorded, the Whippoorwill, whereas in a chronologically arranged list of the foregoing year there are 23 species recorded within the same time! Then compare the time of arrival of the following birds this year, with that of last. Chimney Swift, 1907, May 10; 1906, April 30. House Wren, May 9, May 2. Spotted Sandpiper, May 19, May 2. Black and White Warbler, May 10, May 4. Yellow Warbler, May 13, May 4. Bobolink, May 18, May 5. Black-throated Green Warbler, May 16, May 7. Parula Warbler, May 15, May 7. Least Flycatcher, May 15, May 11. Hummingbird, May 30, May 15. Wood Pewee, May 31, May 17.

Black-poll Warbler, May 31, May 21. This shows a delayment of from four to seventeen days, or an average of  $10\frac{1}{2}$  days for the twelve species. Again, whereas the annual great migratory waves of birds, especially warblers, thrushes and flycatchers, are seen in the gardens along our city limits about May 20-23, this year they were only seen on May 29. But there are exceptions to be noted here also. Last year's first record for the Scarlet Tanager, e. g., was May 17, this year's, May 15; Myrtle Warbler, April 28, May 2. The Nighthawk, which must have had a hard time to find its winged prey, as moths, flies and mosquitos, which were few and far between in May, came on its usual date, May 16.

That the bands of migrants were badly scattered and reduced in number by the cold weather, or rather the lack of food resulting therefrom, cannot be doubted. For instance, during the presence of the Black-poll Warbler here, one can hardly ever be outside of the reach of their voice anywhere in the city — Ottawa is famous for its many large shade-trees along the streets — or in the surroundings, whereas this year I heard only three or four. Normally the Bay-breasted Warbler, together with *Dendroica striata*, the last migrants to arrive here, can be seen by dozens, yes, by hundreds in its favored pine woods, whereas this year they were nearly absent, except for a few hours in a few favored but restricted localities. Similar statements could be made concerning the Cape May Warbler, the Warbling Vireo, the Barn Swallow, etc.; even the Tree Sparrow, Brown Creeper, and Rusty Grackle were hardly in evidence, and the Chimney Swift does not seem to have attained its usual superabundance. Certainly, people that happened to encounter one of the few late larger bird waves, or who noticed the warblers better on account of the missing foliage on the trees in May, will say, I never saw so many birds as this year, or so many warblers, but I am convinced the numbers of many species were less this summer than other years. Perhaps some of the comers, finding conditions so uncongenial here, retraced their way to the south again for some distance. That this was done by the Tree Swallow, at least, I have no doubt, a large flock of which I saw over the Rideau River on March 30, after which none were to be seen again for about two weeks. But here, too, there are exceptions to be recorded. The Ruby-crowned Kinglet seemed to be just as

abundant and jolly as ever, even more so; the Olive-backed Thrush was much commoner than usual; the Spotted Sandpiper I never saw in such abundance anywhere as here in June; and on May 19 the *Dendroica cærulescens*, usually not very numerous even in migration, was so abundant at Dow's Swamp, that its numbers equalled those of all other birds combined.

That the untowardliness of the weather and food conditions not only delayed many species in coming, but made them postpone their departure also, in the case of transient migrants, need not be surprising. Thus, as late as June 7, Tennessee Warblers, Pine Siskins and Olive-backed Thrushes could be heard singing lustily in Major's Hill Park in the center of Ottawa. Of these the Siskins, and Olive-backed Thrushes *probably* breed here in a few scattered instances, but the bulk of them usually retire northward before that time. On the other hand, the Rusty Grackles, Tree Sparrows, and to some extent the White-crowned Sparrows, having arrived later than commonly, did not stay so long as they would normally, but hurried on northward.

But the worst feature in this migration was the deplorable mortality brought about by the un-May-like weather of May. This was probably not so much due to the cold directly, as to the lack of food caused thereby. Vegetation remained at a standstill from end of April to nearly the end of May. The flower and leaf buds did not unfold. As a consequence the small insects, plant lice, etc., that otherwise are found there, were absent. Therefore the insect eaters, especially those living on small insects and lepidoptera, chief among which are the swallows and warblers, had to suffer most. It was a pitiable sight, and a very common one, to see the little warblers with ruffled feathers and half-extended wings, weakened by hunger, searching in the most unlikely places for a little food. On May 28, with snowflakes flying, I saw a Canadian Warbler (*Wilsonia canadensis*) and a Blackburnian Warbler searching for food among rubbish and tin-cans, not able to fly away. Many people, farmers, a lumberman having just returned from Lake Kippewa in the Algoma District, and others, in this and the neighboring counties, told the writer about the "tameness" of the pretty little "black and yellow" birds, that they had "never seen before," allowing one to almost or quite catch them in the hands,

right about the houses, etc. And many were found dead. Two Tree Swallows, one Brown Creeper, one Canadian, and several Blackburnian Warblers were brought to the writer, having been found dead. The last seem to have been the principal sufferers. Three of them were sent to me by a friend from Renfrew County, who had found them dead. Then a strange performance on the part of a Robin was noticed. A Myrtle Warbler was in its last agonies, on a bridge through a farmer's swamp land, when a Robin came and tried to carry it off. Why?

At High Falls, Labelle County, Quebec, 50 miles northeast of Ottawa, the same story could be heard. Many warblers were found dead along the Liévre River, also at other places. On being questioned, quite a number of the children of a school there, reported having found from one to five dead birds, without having looked for them. Several were brought to the museum at Ottawa, etc. Now, it is safe to assume that for each dead bird found, a hundred or a thousand were not found, so the destruction of bird life, especially of warblers, must have been appalling.

Some curious changes in the habits of several species were also brought about by the unfavorable food and weather conditions. If a person had begun to study warblers in this vicinity this spring, he would have come to the conclusion that warblers were terrestrial or even water-loving birds. And he would have had the facts all in his favor, for a while at least. On May 20, during a walk of about a mile, I saw about 15 Yellow Warblers, all on or near the ground on old weed stalks, some never quitting the edge of pools of water. Later I noticed this many times of the *Mniotilla varia*, *D. blackburniae* and *D. maculosa* and *Wilsonia canadensis*. Of the Cape May Warbler, a species rather common here about May 23, but found in spruce only in a few spots, I saw only one last May, and that in a dirty dog-pound! The Myrtle Warbler would certainly have been classed as a swamp bird pure and simple, for it could always be seen over open water in swamps, etc., perching on bushes or old cattails and darting after the few passing gnats and moths in true flycatcher style. The above-mentioned tameness, in most cases really weakness, will probably not be noticed again soon. On May 4, after that snowstorm, several Hermit Thrushes hopped on to the veranda of a house and up to within three feet of two persons standing inside the window, in plain view of the birds.

That the nesting of the birds, whose coming had been so delayed, was also somewhat postponed, is almost self-evident. In fact this was not only caused by lateness of arrival, but also by the lack of cover in trees and swamps. Thus the Robins and Redwings, having been here even earlier than usual, in many cases commenced nest building much later, waiting no doubt for the leaves to come out and the cattails to grow to screen their nests from view. Perhaps for the same reason more Robins put up their establishments on houses, under verandas, over doors and windows and like situations, than I have ever seen before.

The following list will serve to further illustrate some of the points made above. It is not by any means a complete list of all species to be recorded here. Birds like Redpolls, Crossbills, many ducks, hawks, etc., are omitted for apparent reasons. Some species, like the Brown Thrasher, the Olive-sided Flycatcher, the Black-billed Cuckoo, Osprey, etc., were not seen by me till June or July, after being installed in their breeding places for some time.

*Dates of Arrival.*

	1907	1906	1905
Prairie Horned Lark	Feb. 10	Feb. 20	Feb. 28
Crow	Mar. 2	Mar. 9	" 18
Song Sparrow	" 13	Apr. 2	Mar. 18
Robin	" 16	Mar. 31	" 19
Blue Heron	" 17	Apr. 5	—
Bluebird	" 21	" 3	Mar. 24
Cowbird	" 21	" 8	" 29
Bronzed Grackle	" 23	" 2	" 27
Red-winged Blackbird	" 23	" 2	" 24
Tree Sparrow	" 23	" 9	" 24
Meadowlark	" 23	" 5	Apr. 3
Migrant Shrike	" 25	" 16	Mar. 30
Marsh Hawk	" 25	" 12	Apr. 1
Junco	" 25	" 6	Mar. 23
Golden-eye	" 26	Mar. 29	—
Flicker	" 26	Apr. 16	Apr. 10
Winter Wren	" 26	" 18	" 17
Golden-crowned Kinglet	" 26	" 14	" 8
Killdeer	" 26	" 16	Mar. 28
Tree Swallow	" 26	" 8	Apr. 3
Phœbe	" 26	" 9	" 8

*Dates of Arrival.*

	1907	1906	1905
Herring Gull	Mar. 30	Apr. 3	Apr. 10
Sparrow Hawk	" 30	" 7	" 18
Savanna Sparrow	" 31	" 15	" 11
Vesper Sparrow	Apr. 1	" 15	" 12
Brown Creeper	" 2	" 15	Mar. 30
Chipping Sparrow	" 3	" 15	Apr. 12
Kingfisher	" 13	" 16	" 8
Hooded Merganser	" 13	" 7	" 17
Wilson's Snipe	" 18	" 20	—
Hermit Thrush	" 18	" 14	Apr. 10
Barn Swallow	" 18	" 21	" 25
Yellow-bellied Sapsucker	" 27	" 15	" 10
Downy Woodpecker	" 27	" 8	" 11
Purple Finch	" 27	Mar. 29	Mar. 1
White-throated Sparrow	" 28	Apr. 15	Apr. 23
Ruby-crowned Kinglet	" 28	May 1	" 27
Myrtle Warbler	" 28	" 2	May 1
Purple Martin	" 26	Apr. 22	Apr. 23
Whippoorwill	May 5	May 1	—
House Wren	" 9	" 2	Apr. 28
Chimney Swift	" 10	Apr. 30	May 2
Black and White Warbler	" 10	May 4	Apr. 28
White-crowned Sparrow	" 13	" 16	May 16
Yellow Warbler	" 13	" 4	" 1
Blackburnian Warbler	" 13	" 10	" 1
Rose-breasted Grosbeak	" 13	" 13	" 11
Bank Swallow	" 14	" 13	" 18
Redstart	" 14	" 15	" 5
Water-thrush	" 14	" 11	" 8
Kingbird	" 14	" 7	" 5
Baltimore Oriole	" 14	" 13	" 6
Ovenbird	" 14	" 13	" 6
Canadian Warbler	" 15	" 19	" 12
Parula Warbler	" 15	" 7	" 10
Black-throated Blue Warbler	" 15	" 7	" 10
Goldfinch	" 15	Apr. 17	Mar. 13
Least Flycatcher	" 15	May 11	May 5
Nashville Warbler	" 15	" 7	" 7
Magnolia Warbler	" 15	" 16	" 10
Wilson's Thrush	" 15	" 6	" 6
Scarlet Tanager	" 15	" 17	" 14
Wilson's Warbler	" 15	" 21	" 19
Nighthawk	" 16	" 16	" 14

*Dates of Arrival.*

	1907	1906	1905
Warbling Vireo	May 16	May 6	May 10
Red-eyed Vireo	" 16	" 15	" 6
Bay-breasted Warbler	" 16	" 16	" 19
Black-throated Green Warbler	" 16	" 7	" 1
Tennessee Warbler	" 16	" 17	" 24
Cape May Warbler	" 16	" 12	" 22
Northern Yellowthroat	" 16	" 11	" 4
Olive-backed Thrush	" 16	" 13	" 16
Catbird	" 17	" 15	" 6
Chestnut-sided Warbler	" 17	" 13	" 7
Bobolink	" 18	" 5	" 2
Crested Flycatcher	" 19	" 11	" 12
Blue-headed Vireo	" 19	" 15	" 7
Cliff Swallow	" 19	" 9	" 17
Rusty Grackle	" 19	" 7	Apr. 10
Spotted Sandpiper	" 19	" 2	May 4
Sora	" 19	" 8	—
Solitary Sandpiper	" 20	" 18	—
Swamp Sparrow	" 20	Apr. 18	May 8
Bittern	" 20	" 16	—
Gray-cheeked Thrush	" 23	—	May 14
Alder Flycatcher	" 24	May 19	" 24
White-breasted Nuthatch	" 24	Apr. 4	Feb. 28
Mourning Warbler	" 29	May 19	May 12
Red-headed Woodpecker	" 29	" 26	
Blackpoll Warbler	" 31	" 21	May 17
Wood Pewee	" 31	" 17	" 4
Hummingbird	" 30	" 15	" 11

Ottawa, Ontario, Aug. 23, 1907.

## NOTES ON THE SPRING MIGRATION (1907) AT ANN ARBOR, MICHIGAN.<sup>1</sup>

BY NORMAN A. WOOD.

### INTRODUCTION.

FROM the last week in April to June 6, 1907, the writer made almost daily observations on the bird life in the vicinity of Ann Arbor, Michigan. Beginning at 4 a. m., from four to six hours per day were spent in the field, listing all of the species seen and collecting the rarer and doubtful specimens. Unusually low temperatures in May attended by continued snow and ice to the north, apparently prevented large numbers of the migrant warblers from leaving this vicinity until the last of May and the first of June, giving us the latest records on our migration lists, and furnishing rare opportunities for observation and study of these and other species.

### GENERAL CONDITIONS.

*January, 1907.* This was not a cold month for this region, as the average temperature was only 20.6° F. But few winter visitants were seen; a few Pine and Evening Grosbeaks, one small flock of White-winged Crossbills, a few Pine Siskins, and several flocks of Redpolls, make up the list of recorded species. Several small colonies of Red-headed Woodpeckers wintered in heavy oak woods, and numbers of Song Sparrows along the streams. The former is a rare winter resident in this vicinity although the latter is common.

*February.* As a whole this was also a relatively mild month, the average temperature being 18.1°, and the Robin, Bluebird and Meadow Lark came (before Feb. 26) earlier than the average arrival, which is the first week of March.

*March.* The first part of March was colder and for the first ten days the temperature was below the normal (29.1°). No migrants were seen until the 10th. From the 10th to the 21st,

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<sup>1</sup> From the University Museum, University of Michigan.

the temperature was above the normal most of the time, and from the latter date to March 31, the departure from the normal was considerable, the increase over the usual temperature ranging from ten to twenty degrees per day. The maximum ( $71^{\circ}$ ) was on March 27. The temperature for the month was  $34.6^{\circ}$ . The continued warm weather of the last week may have caused the large number of migrants; 27 species being recorded after the 21st.

*April.* This was an unusually cold month, the average temperature being  $35.1^{\circ}$ , nearly the same as that of March, making this the coldest April in Michigan since 1874. Only three species of migrants were seen before April 18, when the first warbler (Myrtle) was seen. This was only three days later than our earliest record for this species. From April 18 to 30, 31 species of birds were noted and, notwithstanding the cold weather, several of the early warblers arrived; the Yellow and the Pine Warblers on April 26.

*May.* This month was also very cold with some snow and ice, with many hard frosts as late as the 28th. The average temperature was  $44.5^{\circ}$ , or  $7.6^{\circ}$  below the normal. These conditions did not seem to affect the bird migration, as the species continued to come with very little variation from the usual dates of arrival. This was especially true of the earlier warblers, and the most of them arrived at about the average date for the species in spite of the fact that all vegetation was at least two weeks later than common. But notwithstanding the fact that most of the species arrived here at the usual date, they continued to linger long after that time. Nor was it the spring migrants alone that lingered, but several of the winter visitants also, as the Pine Siskin was seen on May 17, the White-throated Sparrow on May 21 and the Junco on May 22. Associated with these species I found the Cape May, Palm, Black-poll, Bay-breasted, Chestnut-sided, Tennessee, Myrtle, Magnolia, Black-throated Blue, and Black-throated Green Warblers. On the morning of May 21 I found ice one eighth of an inch thick that had formed in a boat on the beach at Portage Lake, Washenaw County, Mich., but all the birds just mentioned were seen along the bluff near this lake, and again on June 2, with the exception of the Junco, White-throated Sparrow, Palm, and Cape May Warblers, which were not seen after May 22. The morning of May 28 was cold with a hard white frost and a temperature of  $34^{\circ}$ ,

but I found six Wilson's, three Mourning, and two Connecticut Warblers. These three species are rare here as a rule, but this year they occurred in unusual numbers.

I give below a list of migrant warblers with the dates of arrival, and departure, and it will be seen that most of the latter dates are later than any previous records for this region. In the appended list I have given the earliest dates on which most of our spring migrants were observed here this year.

*List of migrant Warblers giving the earliest and latest Spring Records in 1907.*

	Earliest Record.	Latest Record.
1. Myrtle Warbler.....	April 18	June 3.
2. Yellow Warbler.....	April 26	
3. Pine Warbler.....	April 26	May 2.
4. Black-and-White Warbler.....	April 27	May 28
5. Palm Warbler.....	April 29	May 22.
6. Black-throated Green Warbler.....	April 29	June 6.
7. Nashville Warbler.....	May 3	June 3.
8. Blackburnian Warbler.....	May 9	June 6.
9. Chestnut-sided Warbler.....	May 9	June 6.
10. Black-throated Blue Warbler.....	May 9	May 30.
11. Magnolia Warbler.....	May 9	June 6.
12. Prairie Warbler.....	May 12	May 15.
13. Tennessee Warbler.....	May 12	June 6.
14. Parula Warbler.....	May 12	May 16.
15. Canadian Warbler.....	May 13	June 2.
16. Kirtland Warbler.....	May 13	May 16.
17. Hooded Warbler.....	May 13	May 13.
18. Prothonotary Warbler.....	May 13	May 21.
19. Bay-breasted Warbler.....	May 13	June 6.
20. Black-poll Warbler.....	May 16	June 6.
21. Connecticut Warbler.....	May 18	June 6.
22. Cape May Warbler.....	May 21	May 21.
23. Mourning Warbler.....	May 28	May 31.
24. Wilson's Warbler.....	May 28	June 6.
25. Golden-winged Warbler.....	May 11	
26. Cerulean Warbler.....	May 15.	

## CONCLUSION.

By comparing these dates of arrival with my table of migration for 25 years (Eighth Report, Michigan Academy of Science, 1906, pp. 151-157), I find they correspond very closely with the average dates of arrival as given there, showing that this year the later migrants arrived in this locality at about the same date, and further that very few are later than usual, notwithstanding the cold and the fact that all vegetation was at least two weeks later than usual. This favors the belief that these birds are not governed exactly in their northward migration by weather or food conditions, but that while they may start out on their migration only under favorable conditions, they often migrate into regions of unfavorable conditions before being checked. Thus the species that reached this locality were in fine condition, but as the conditions here as well as to the northward were unfavorable, many individuals remained here an unusually long time. This was strikingly illustrated by the fact that many of those that migrate the farthest north were the last to leave this locality. I found no evidence of mortality here, due to weather or food conditions, but Miss Harriet Wright of Saginaw, Mich., wrote me that on the morning of May 27 (following a severe night with snow and ice), she picked up numbers of dead warblers of the following species: Tennessee, Canadian, Chestnut-sided, Magnolia, Blackburnian, and Black-throated Green Warblers.

Furthermore, as proof that birds of many species do migrate far ahead of safe weather and food conditions, Prof. W. H. Munson of the State Normal School, Winona, Minnesota, has given me the following statement: "The weather was cold in May, and the vegetation very backward, insect life was scarce and the migrants (which came a little later than usual) had hard work to find sufficient food. This fact combined with the severe cold and storms caused the death of hundreds of birds of many different species. The greatest mortality seemed to be among the Flycatchers of which the Least Flycatcher seemed to suffer the most. A boy brought to me a peck basket nearly full of birds, consisting principally of this species, which he had picked up along the bluff where the birds went for protection from the storms. Large numbers of Black-and-White Warblers were found dead, and the

Tennessee Warblers suffered nearly as great a loss, as did also the Nashville Warblers. A few Chestnut-sided, Bay-breasted, and Black-poll Warblers, were found dead. [The small number found of the last three may be accounted for by these species being late arrivals, thus encountering better conditions.] Four Palm Warblers, 2 Baltimore Orioles, 1 Rough-winged Swallow, 2 Purple Martins (the most of the last species did not arrive until warmer weather), 1 Rose-breasted Grosbeak, 1 Red-eyed Vireo, 6 Ovenbirds, a few Prothonotary Warblers and several Yellow-breasted Chats were also brought in dead. The Myrtle Warbler was very abundant, but only a few were found dead, [possibly owing to their great diversity of diet, being able to eat seeds and food not available to most warblers]. The Yellow Warbler also seemed hardy, as none were found dead. The mortality must have been large, as no effort was made to collect these dead birds, and nearly all were picked up by school children. All birds observed were very emaciated and the stomachs and intestines were empty."

*List of Spring Migrants, exclusive of Warblers, giving date when first seen.*

1. Meadowlark	Feb. 6.	21. Cooper's Hawk	Mar. 22.
2. Bluebird	Feb. 20.	22. House Wren	Mar. 22.
3. Robin	Feb. 25.	23. Purple Martin	Mar. 23.
4. Red-tailed Hawk	Mar. 10.	24. Chipping Sparrow	Mar. 23.
5. Red-shouldered Hawk	Mar. 10.	25. Great Blue Heron	Mar. 23.
6. Rusty Blackbird	Mar. 10.	26. Black Duck	Mar. 23.
7. Red-winged Blackbird	Mar. 13.	27. Tufted Titmouse	Mar. 24.
8. Killdeer	Mar. 13.	28. Field Sparrow	Mar. 24.
9. Bronzed Grackle	Mar. 15.	29. Hermit Thrush	Mar. 24.
10. Cowbird	Mar. 16.	30. Broad-winged Hawk	Mar. 24.
11. Marsh Hawk	Mar. 16.	31. American Bittern	Mar. 25.
12. Woodcock	Mar. 16.	32. Yellow-bellied Sapsucker	Mar. 26.
13. Towhee	Mar. 16.	33. Loon	Mar. 28.
14. Swamp Sparrow	Mar. 16.	34. Ring-billed Gull	Mar. 28.
15. Prairie Horned Lark	Mar. 16.	35. Greater Yellow-legs	Mar. 30.
16. Pewee	Mar. 22.	36. Red-head Duck	Mar. 30.
17. Winter Wren	Mar. 22.	37. Ruddy Duck	Mar. 30.
18. Fox Sparrow	Mar. 22.	38. American Coot.	Mar. 30.
19. Vesper Sparrow	Mar. 22.	39. Tree Swallow	Mar. 30.
20. Golden-crowned Kinglet	Mar. 22.	40. Lesser Scaup Duck	Mar. 30.

41. Red-bellied Wood-pecker	Mar. 31.	75. Wilson's Thrush	May 3.
42. Pied-billed Grebe	Mar. 31.	76. Rose-breasted Gros-beak	May 3.
43. American Osprey	April 1.	77. Ovenbird	May 5.
44. Brown Thrasher	April 3.	78. Sora Rail	May 5.
45. Wilson's Snipe	April 5.	79. Least Flycatcher	May 5.
46. Greater Scaup Duck	April 18.	80. Louisiana Water-thrush	
47. Bufflehead Duck	April 19.		May 6.
48. Hooded Merganser	April 20.	81. Florida Gallinule	May 6.
49. Bank Swallow	April 20.	82. Wood Pewee	May 9.
50. Barn Swallow	April 20.	83. Solitary Vireo	May 9.
51. Sharp-shinned Hawk	April 20.	84. Long-billed Marsh Wren	
52. Olive-backed Thrush	April 20.		May 9.
53. White-throated Sparrow.	April 23.	85. Warbling Vireo	May 10.
54. Chimney Swift	April 24.	86. Alder Flycatcher	May 10.
55. Blue-gray Gnatcatcher	April 27.	87. Yellow-throated Vireo	
			May 12.
56. Cliff Swallow	April 27.	88. Crested Flycatcher	May 12.
57. Bonaparte's Gull	April 27.	89. Green Heron	May 12.
58. Spotted Sandpiper	April 27.	90. Common Tern	May 12.
59. Virginia Rail	April 27.	91. Horned Grebe	May 12.
60. Rough-winged Swallow	April 27.	92. Scarlet Tanager	May 13.
		93. Red-eyed Vireo	May 13.
61. Bartram's Sandpiper	April 28.	94. Ruby-throated Hummingbird	May 13.
62. Bobolink	April 28.	95. Black-billed Cuckoo	May 13.
63. Wood Duck	April 28.	96. Yellow-billed Cuckoo	May 13.
64. Northern Yellow-throat	April 28.	97. Indigo Bunting	May 14.
		98. Whip-poor-will	May 14.
65. Kingbird	April 28.	99. Least Bittern	May 15.
66. Pin-tail Duck	April 28.	100. Orchard Oriole	May 15.
67. Baltimore Oriole	April 28.	101. Pine Siskin	May 17.
68. American Redstart	April 29.	102. Black Tern	May 18.
69. Red-breasted Merganser	April 29.	103. Night Hawk	May 18.
		104. Turkey Vulture	May 29.
70. Alice's Thrush	April 29.	105. Yellow-bellied Flycatcher	May 30.
71. Lark Sparrow	May 1.	106. Philadelphia Vireo	May 30.
72. Catbird	May 1.	107. Olive-sided Flycatcher	
73. Red-breasted Nut-hatch	May 1.		June 6.
74. Wood Thrush	May 2.		

NESTING HABITS OF BIRDS AT STAMFORD, CONNECTICUT, AS AFFECTED BY THE COLD SPRING OF 1907.

BY LOUIS H. PORTER.

THE spring of 1907 was abnormally cold and backward. The prevailing temperature during the last week of May and the first week of June was about the same as we usually expect the middle of April. While vegetation was somewhat backward, the effect on the nesting habits of our birds was even more pronounced and interesting.

During the migrating season I saw very few birds, less than a tenth as many migrants as usual, but those that I did see were at about the usual dates, and did not average later than normal. During the nesting season, however, birds seemed more abundant than usual, but their habits were materially altered. I did not obtain sufficient data to justify any broad generalization, but from my observations it seemed that most birds commenced nest building at about the average calendar date, but that as a result of the cold season the more delicate species took very much longer in their nest building; when the nest was finally completed, the egg laying period was also protracted, extending to two or three times its usual period; and finally that after the set was completed, the birds, in some cases at least, did not immediately commence sitting.

If other observers noticed a similar condition, an interesting question is raised as to the extent to which this protraction of the breeding period was due to volition on the bird's part, or to the physical effect of the cold weather upon the genital organs.

My records show the following data in support of these conclusions.

**Helminthophila pinus.** This bird breeds abundantly at Stamford, and is the most regular in its habits of any bird I know of. My records prior to this year give the earliest breeding date, May 27, and the latest June 10 (young nearly ready to fly) with an average of May 29. All the sets I had taken May 30, or later, had incubation well advanced. Other published records which I consulted agree with this experience. Full sets can usually be found

the last few days of May. This year's record shows a marked departure from the normal as follows:—

May 28, found a nest just finished; June 4, this nest had three eggs; June 8, it had four eggs, in which incubation had just begun.

May 28, found nest just finished. June 4, this nest had two eggs; June 8, it had three fresh eggs.

June 6, found nest with one egg; June 10, four fresh eggs.

June 6, found nest with two eggs. June 10, five fresh eggs.

June 6, found nest just finished. June 10, three fresh eggs, female sitting very close.

June 10, found nest, six eggs, incubation just begun.

June 15, found nest, four eggs, incubation five or six days advanced.

June 15, found nest with one egg.

June 15, found nest with two eggs.

I was unable to get out after June 15, and therefore could not watch these last two nests, or take any later notes. The first full set of eggs, however, was June 8, and the average date for a full set of fresh eggs could apparently be put at June 10 or 12, or about two weeks later than the average.

While the data are not so satisfactory as to deposition of eggs, it appears that in one case, the set was not complete in nine days, only three eggs having been laid, in another four eggs were laid in about eight days, in three others three eggs in four days, the latter all toward the end of the season.

I did not find any nests of this species in process of construction.

**Dendroica pensylvanica.** I have invariably found these eggs from May 29 to June 1. This year the birds were seen abundantly on May 11, and I took a set of fresh eggs June 10, and another somewhat incubated June 15. Aside from the later nesting averages, the chief interest in this species is connected with building times.

May 23, found one nest completed and another just commenced, the birds being hard at work. Both nests were abandoned, although the birds were seen around for some weeks, and neither nest was apparently disturbed.

May 27, found nest half complete, birds hard at work. May 30, there was no apparent change, and the nest was apparently

deserted. The weather had been exceedingly cold and windy. June 10 this nest had four fresh eggs.

**Wilsonia mitrata.** Prior to 1907, found nests with young nearly ready to fly, June 7, and June 10, and laying female shot May 30. I had not seen this species in Stamford prior to 1904, when I saw two pairs. They have increased rapidly, and this year I saw twenty-five or thirty birds and, in company with Mr. W. H. Hoyt, found eight nests. Chapman's 'Warblers of North America' gives nesting dates for New York City of May 26 to June 15, and Bishop for New Haven of May 27 to June 24. My dates for 1907 were June 8, one set, June 12, two sets, June 15, three sets, June 22, one set, all but the last being fresh or nearly fresh. These eggs seem to average nearly three weeks later than my previous experience, but are not apparently so exceptional as compared with Messrs. Chapman and Bishop's records. The chief interest in this bird is in the slow progress made.

The first bird was seen May 11; May 18 perhaps the same bird was seen in the same spot, near a nest of the previous year. May 23, the bird was seen building, the nest perhaps one third completed. May 30, nest built very high and deep, but not finished. June 6, nest finished. The birds never used the nest, but were seen around on the 6th. On the 10th they were seen disturbed in another part of the woods, but no nest was found. In September the nest they apparently used was found about a hundred yards away. These birds therefore spent thirteen days in building a nest which they subsequently abandoned, building another which was not commenced until after June 10, or three weeks after the time they first began to build.

On May 28 I found another nest just completed. On June 4 this nest had two eggs. On June 8, it had two warbler eggs and one cowbird's egg. All these eggs were perfectly fresh.

On June 4, I found a nest just commenced, the birds being busy building. June 8, the nest was finished, but the bird not seen. June 15, three warbler eggs, and one cowbird; incubation just commenced and bird sitting very close.

June 8, found a nest just finished. June 15, four fresh eggs, bird sitting very close.

On June 15 a nest with three eggs was found, which from the

location, the construction of the nest, the appearance of the eggs, the appearance and actions of the birds, I believe to be a second set of the nest of June 8. Mr. Hoyt took this set June 22, with four eggs, and incubation four or five days advanced.

With this species the authorities give the average normal time from commencing the nest to the completion of the set of eggs as about a week. This year nesting commenced not much later than usual, but the time until incubation commenced was extended from a normal of one week to from two to three weeks.

**Geothlypis trichas brachidactyla.** I have previously taken sets of these eggs from May 28 to June 6. Chapman gives New York City dates as May 25 to June 15, and Bishop, New Haven dates as May 28 to June 18.

This year I took a set of fresh eggs June 10, and a set with incubation just begun, June 15.

This second nest was found finished on June 4. On June 12 there were four eggs, but the birds were not seen, although I watched nearly an hour. On June 15, incubation had just commenced. The period of deposit of eggs was in this case clearly prolonged, and the dates seem later than the average.

**Icteria virens.** This species breeds abundantly, dates in former years running from May 22 to June 15. I found six nests in varying stages, but none of them contained eggs up to June 15.

**Seiurus aurocapillus.** I have previously taken these eggs from May 23 to June 6. The latest fresh eggs were May 26, and in all sets subsequent to that date incubation was advanced. Chapman gives New York City dates of May 20 to July 5, and Bishop, New Haven, May 30 to July 10. The later dates are clearly second sets. The average for the first sets would therefore appear to be the last week in May. This year I found four sets, all fresh,—one May 30, one June 10, and two June 12. The nest of May 30 was found finished on May 23. On June 12, Mr. Hoyt found a nest building and took a set of fresh eggs June 22. This species apparently averaged two weeks later than usual.

**Seiurus motacilla.** These birds are hardy, usually arriving the middle of April, and nesting being well under way by May 15. We naturally should not expect the cold season to affect these birds.

The only nest I found was on May 23, containing young birds

just hatched. On June 10, in another woods, I saw a young of the year just able to fly. These dates are if anything somewhat earlier than my usual experience. Apparently these birds nested without regard to the temperature.

**Setophaga ruticilla.** The three sets found this year were not as much later than the normal as most of the warblers. The dates were June 8, incubation begun; June 16, incubation almost complete; June 22, incubation advanced. The nest of June 8 was half completed on May 21, was finished and birds not seen May 28, and had three eggs about two days incubated on June 8.

**Vireo olivaceus.** This species breeds abundantly. Normally two or three nests can be found any day from June 1 to June 15. Eggs taken after June 12 have all been incubated. This year only one nest was found, and that was building on June 15. They were from two to three weeks later than usual.

**Vireo noveboracensis.** These birds were not apparently much later in commencing nesting, but took longer to build.

May 25 found two nests about half finished; May 28 no change in appearance of either nest. June 4, birds hard at work at both nests, which appeared to be completed. June 12, one nest had four eggs, and the other three. In each case the bird was sitting very close, and the eggs were fresh.

June 1, found nest almost complete. June 9, one egg. I was unable to visit this nest again. On the mornings of June 2 and 3, the thermometer was at 45° F.

**Empidonax virescens.** In the colony I reported in last year's 'Auk,' two nests were taken June 2, and one June 7. This year I frequently saw several birds in the vicinity of the breeding site. June 12, a nest was found commenced; June 16 it was completed; June 22, three eggs with incubation just begun. These birds were therefore from two to three weeks later than the same colony of birds last year.

**Pipilo erythrophthalmus.** This is another hardy bird. My previous dates run from May 21 to June 5. These birds seemed unaffected by the cold. I found five nests from May 28 to June 6. Two of the nests were six feet high in cedar trees. I have not before found this species nesting off the ground. The question suggests itself whether these birds varied their usual nesting site on account of the cold wet season.

**Parus atricapillus.** The normal dates for fresh eggs are from May 10 to May 30. This year the only nest found was building on May 25, and had a set of seven nearly fresh eggs on June 4.

The divergence from the normal nesting did not attract my notice until it was too late to take any notes or data concerning the commoner birds, whose nests I saw in numbers, without collecting or accurately noting. At the same time, in the case of some of the rarer nests I found this year I have no other data with which this year's can be compared. The foregoing species are therefore the only ones as to which I have any accurate data available.

The data given seem to show, that the tender and delicate birds averaged about two weeks later than usual in deposit of eggs in 1907, and that they spent much more than the normal time in nest building. The conclusion seems inevitable that both of these phenomena were directly caused by the unseasonably cold weather.

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#### THE BREEDING SEASON OF THE AMERICAN BARN OWL (*STRIX PRATINCOLA*) IN SOUTH CAROLINA.

BY ARTHUR T. WAYNE.

IN Audubon's 'Ornithological Biography,' Vol. II, pp. 404-405, he states the following concerning the breeding of this species:

"Having arrived at Charleston, South Carolina, in October, 1833, as soon as my family and myself were settled in the house of my friend the Reverend John Bachman, I received information that a pair of owls (of the present species) had a nest in the upper story of an abandoned sugar-house in the city, when I immediately proceeded to the place, accompanied by Dr. Samuel Wilson and William Kunhardt, Esq. We ascended cautiously to the place, I having pulled off my boots to prevent noise. When we reached it, I found a sort of large garret filled with sugar-moulds, and lighted by several windows, one of which had two panes broken. I at once discovered the spot where the owls were by the hissing sounds of the young ones, and approached slowly and cautiously

towards them, until within a few feet, when the parent bird seeing me, flew quickly towards the window, touched the frame of the broken panes, and glided silently through the aperture. I could not even afterwards observe the course of its flight. The young were three in number, and covered with down of a rich cream color. They raised themselves on their legs, appeared to swell, and emitted a constant hissing sound, somewhat resembling that of a large snake when angry. They continued thus without altering their position, during the whole of our stay, which lasted about twenty minutes. They were on a scattered parcel of bits of straw, and surrounded by a bank made of their ejected pellets. Very few marks of their excrements were on the floor, and they were beautifully clean. A Cotton Rat, newly caught, and still entire, lay beside them, and must have been brought from a distance of several miles, that animal abounding in the rice-fields, none of which, I believe, are nearer than three or four miles. After making some arrangements with the Negro man who kept the house, we returned home. The eggs from which these young owls had been hatched must have been laid six weeks before this date, or about the 15th of September.

"On the 25th of November they had grown much in size, but none of the feathers had yet made their appearance, excepting the primaries, which were now about an inch long, thick, full of blood, and so tender that the least pressure of the fingers might have burst them. As the young grow more and more, the parents feed and attend to them less frequently than when very small, coming to them in the night only with food. This proves the caution of these birds in avoiding danger, and the faculty which the young possess of supporting abstinence in this middle state of their growth.

"On the 7th of December I visited the Owls in company with my friend John Bachman. We found them much grown; indeed, their primaries were well out; but their back and breast, and all their lower parts, were still thickly covered with down.

"On the 6th of January I again saw them, but one of the young was dead, although in good condition. I was surprised that their food still continued to be composed entirely of small quadrupeds, and principally of the rat mentioned above.

"My last visit to them was on the 18th of January. The two younger ones were now, to all appearance, full grown, but were yet unable to fly. A few tufts of down still remained attached to the feathers in scattered parts of the body. I took them home. One was killed, and the skin preserved.

"Now, these facts are the more interesting, that none of the numerous European authors with whom I am acquainted, have said a single word respecting the time of breeding of this species, but appear to be more intent on producing long lists of synonyms than on presenting the useful materials from which the student of nature can draw inferences. I shall therefore leave to them to say whether our species is, or is not, the same as the one found in the churches and ruins of Europe. Should it prove to be the same species, and if the European bird breeds, as I suspect it does, at so different a period of the year, the American Owl will form a kind of mystery in the operations of nature, as they differ not only from those of the bird in question, but of all other Owls with which I am acquainted."

Although I have been endeavoring to procure the eggs of this species for more than twenty years in order to establish the normal season in which it breeds, information has only recently been obtained. A pair of these Owls has been breeding for many years in an old mill on the plantation of Mr. J. St. Clair White, near the banks of the Cooper River. Mrs. White, the wife of the owner of the plantation, in answering a communication relative to the eggs of this bird, wrote under date of January 3, 1906, as follows: "Knowing quite as much about the Owls as he [Mr. White] does, through the children, who have always been interested in them, I will state that there were young there [the old mill] a month ago." I then concluded that the eggs must be laid during the month of November and requested the sons of Mr. White to keep a close watch on the building. On November 18, 1906, Mrs. White wrote: "I had to wait for Thomas [her son] to go to the barn to find out what the Owls were doing, and as is usual at this season they have a nest of young."

As Audubon does not mention in his 'Birds of America' the account of the breeding of this species witnessed by him in Charleston, and as this work was said by him to be "similar to my large

work" (*Ornithological Biography*), I naturally inferred that he was not acquainted with the breeding habits of this Owl and hoped to establish a record, when it occurred to me that I had read, when a youth, in the latter work a long account of the breeding of this species and recalled the month in which the eggs were laid. A letter was sent to Mrs. White on September 17, 1907, with the request that the mill be searched for eggs. On September 19, her son, Master Thomas Porcher White, succeeded in finding six eggs. Upon the reception of the eggs I observed that they were all laid at irregular intervals of five to twelve days, as one egg contained a very large embryo, another about one half incubated, a third had a well-formed embryo, while the others were in lesser stages of development. The first egg must have been laid not later than September 5, as it undoubtedly had been incubated for at least fourteen days.

Much credit is due young White for his untiring efforts in my behalf in order that the normal season should be definitely established.

That this species should breed in South Carolina in September is indeed remarkable, for according to Davie (*Nests and Eggs of North American Birds*, p. 191), it breeds in southern Florida in March, while in the region of Los Angeles, California (Lat. 34°), the breeding season extends from April until the last of June.

As no mention is made of the breeding of this owl in the States of Florida and California during the autumnal months, the spring must therefore be considered the regular season in which it breeds, unless it annually rears two broods, and if such proves to be the case the birds may be autumnal breeders in those States. The reason this species breeds in September in the low coast region of South Carolina is doubtless due to the fact that the food supply, which consists of small mammals, is more abundant and more easily procured during the autumnal and early winter months than in late winter and spring.

Since the above was written I found an account of the breeding of this owl by Mr. R. W. Williams, Jr., in 'The Auk,' XIX, 1902, p. 198, wherein he states that a set comprising five eggs was found on December 12. These observations were made at Tallahassee, which is in the northwestern part of Florida and near the Georgia line.

Mr. R. D. Hoyt of Seven Oaks, Hillsboro County, Florida, writes me under date of Oct. 19, 1907: "No, I have never taken the Barn Owl here, and September seems a queer time for them to nest in South Carolina. This owl is very plentiful in the Cape Sable region, Florida. Two years ago I saw as many as eight or ten at a time flying over the marshes just at dusk, and it would be interesting to know when they breed in that country, as there is no timber to speak of, and in the daytime the owls roost in the grass, the same as Short-eared [*Asio accipitrinus*]."

I am indebted to my friend Mr. Herbert Ravenel Sass for transcribing Audubon's account in his 'Ornithological Biography.'

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## SUMMER BIRDS OF SOUTHWESTERN SASKATCHEWAN.<sup>1</sup>

BY A. C. BENT.

77. ***Asio wilsonianus.*** AMERICAN LONG-EARED OWL.—Only one pair was found. On June 2, 1905, I climbed to an old Roughleg's nest, about 14 feet up in a solitary poplar tree, on Bear Creek, and as I looked over the edge of the nest I was surprised to see a Long-eared Owl staring me in the face. I pushed her to one side and saw that she was sitting on 5 eggs which were on the point of hatching.

78. ***Asio accipitrinus.*** SHORT-EARED OWL.—Uncommon. About 3 or 4 pairs were located but only one nest was found. This was on the duck island in Crane Lake, and on June 13, 1905, it contained one egg and 9 young in various stages of growth. The nest was surrounded with a great lot of blackbird feathers.

79. ***Bubo virginianus arcticus.*** ARCTIC HORNED OWL.—One pair of Horned Owls was located in 1905, and at least two pairs in 1906, in the heavier timber on Maple and Skull Creeks. One pair had occupied one of the old heron's nests in the Great Blue Heron rookery on Skull Creek and at the time we found it, June 5, 1905, the young had just left the nest; the female and one of the young were secured. The owls seemed to live in harmony with the herons, for there was an occupied heron's nest in the

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<sup>1</sup> Concluded from Vol. XXIV, p. 430.

next tree, about 15 feet away. Two more adult Horned Owls were collected on June 25 and 30, 1906.

All of our birds are very light colored, particularly above, where they are fully as light as the average and almost as light as the most typical *arcticus*. On the under parts, however, there is more ochraceous and less pure white than there should be. The legs and feet are somewhat clouded with pale ochraceous and the legs faintly barred with dusky.

If we recognize the large pale owls of the northern prairie States as *occidentalis* Stone, and admit, as Mr. Oberholser claims, that it has both a dark and a light phase, then our birds should, in my opinion, be referred to *occidentalis*, as being nearer that than pure *arcticus*. The status of our birds depends on the relative importance of the characters named, and as they are more or less intermediate between these two forms, I prefer to let them stand as above, for the present at least.

80. *Speotyto cunicularia hypogaea*. BURROWING OWL.—Only 3 pairs were located. A pair was found breeding on the prairie near Crane Lake, and the nest was dug out on June 2, 1905, containing 7 fresh eggs. Birds were also seen at Hay Lake and near Maple Creek. A nest with young was found near Many Island Lake on July 13, 1906.

81. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO.—This species was recorded by Prof. Macoun as far west as Medicine Hat. A Black-billed Cuckoo was seen by Mr. Day in the Skull Creek timber on June 9, 1905. None were collected and no others seen.

82. *Ceryle alcyon*. BELTED KINGFISHER.—Prof. Macoun recorded it as common. Dr. Bishop saw one in Maple Creek on June 16 and another there on July 4, 1906. None were collected.

83. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.—Rare. Mr. Day saw one in the Skull Creek timber on June 9, 1905, and Dr. Dwight collected one in the Big Stick timber on July 19, 1906.

84. *Colaptes auratus luteus*. NORTHERN FLICKER.

85. *Colaptes cafer collaris*. RED-SHAFTED FLICKER.—Flickers were very common in the heavy timber along the creeks and were also seen in the Cypress Hills. A nest with 6 fresh eggs was found on May 30, 1905, and nests with young were found on June 5 and 14, 1906.

Practically pure blooded birds of both species were taken and quite a series of hybrid birds showing all the intermediate grades of plumage. Almost all of the males show some traces of the red moustaches of *cafer*, and nearly all show traces of the red nuchal crescent of *auratus*; the other characters seem to be less constant. I collected in 1905 a pure blooded male *auratus*, which was apparently mated, with a nearly pure blooded *cafer* female. Two young in juvenal plumage, one almost pure *cafer* and the other equally near *auratus*, were taken from the same family on June 30, 1906.

86. *Chordeiles virginianus*. NIGHTHAWK.—An adult male was taken by Dr. Bishop at Maple Creek on June 5, 1906, which he called this form. All the others that we took were referred to *sennetti*.

Prof. Macoun called the birds of this region *henryi*, which I am inclined to think was an error. Probably the bird we took on June 5 was migrating, as I believe *virginianus* is the form found farther north in the timbered regions.

87. **Chordeiles virginianus sennetti.** SENNETT'S NIGHTHAWK.—Common in and near the timber belts. None had arrived on June 1, 1905, but they were common on June 5, 1906. A female with eggs was taken in the Big Stick timber on July 19, 1906.

88. **Tyrannus tyrannus.** KINGBIRD.—Common. Found breeding in the timber on Maple and Skull Creeks, also noted in rows of small trees, set out along roadsides and about the ranches. Nests with eggs found June 12, 1905, and June 25, 1906.

89. **Tyrannus verticalis.** ARKANSAS KINGBIRD.—Not quite so common as the preceding in the timber on Maple and Skull Creeks, nesting principally in the larger trees. Nests found, empty on June 12, 1905, and with fresh eggs on June 14, 1905, and June 18, 1906. Noisy and conspicuous birds. They seemed to disappear in July, as the others were not able to collect any during that month.

90. **Sayornis saya.** SAY'S PHOEBE.—Uncommon; three pairs located in 1905 and 2 pairs in 1906 about the ranches. A nest was found under a bridge on May 30, 1905. Two nests with fresh eggs were found under the eaves of buildings on June 5 and 10, 1905, and a nest with large young was found inside a small shed on June 24, 1906.

91. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.—On June 8, 1906, after a prolonged and very heavy rain fall, lasting several days and causing Maple Creek to overflow its banks and flood the surrounding plains, we noticed a heavy flight or wave of migrating small birds in the timber along this creek. Among a number of species collected that day and not seen again were 2 Olive-sided Flycatchers, probably belated migrants.

92. **Contopus richardsonii.** WESTERN WOOD PEWEE.—Dr. Bishop took an adult female in the Cypress Hills on July 27, 1906.

93. **Empidonax traillii alnorum.** ALDER FLYCATCHER.—Dr. Bishop referred to this form an adult female which he took in the Cypress Hills on July 27, 1906. This form may also have occurred in the timber on the creeks, but none were collected there. Prof. Macoun called his birds from this region *traillii*.

94. **Empidonax minimus.** LEAST FLYCATCHER.—Very common in the timber on Maple and Skull Creeks. All the small flycatchers that we collected here were this species. One nest was found with 3 fresh eggs on June 25, 1906.

95. **Empidonax wrightii.** WRIGHT'S FLYCATCHER.—Dr. Bishop found it common, with half fledged young, in the Cypress Hills, from July 25 to 30, 1906, and collected a number of specimens. Not collected elsewhere.

96. **Otocoris alpestris leucolaema.** DESERT HORNED LARK.—Very common on the prairies, particularly on the barren hills north of Maple

Creek and on the alkaline plains. No nests were found but fully fledged young, in juvenal plumage, were taken as early as June 13, 1906.

The birds of this region are intermediate between this form and *Otocoris alpestris enthymia* Oberholser. We collected quite a series of Horned Larks most of which, particularly those collected on the prairies in the eastern portion of the region we visited, were nearer *enthymia*, while those collected on the alkaline, sage-brush plains of western Saskatchewan and in Alberta were more typical of *leucomela*.

This new form described by Mr. Oberholser in 1902 and first noted by Dr. Bishop in North Dakota in 1895, seems to be well marked and worthy of recognition, as the bird of the northern prairie region. But as it has not yet been formally accepted I must list our birds as *leucomela* (Coues).

97. *Pica pica hudsonia*. AMERICAN MAGPIE.—Magpies were recorded at various points in this region by Prof. Macoun, and we were told by various residents that we should find them in the timber belts, but we failed to see any of them either season. Our only evidence of their occurrence is contained in the following quotation from Dr. Bishop:—"I found the deserted nest of a Magpie about 8 feet up in a clump of willows in the Big Stick timber on July 19. Dwight climbed high enough to see that it was domed."

98. *Corvus brachyrhynchos hesperis*. CALIFORNIA CROW.—A few pairs of Crows were noted, mostly near Crane Lake. Nests containing young were found on June 13 and 17, 1905, and on June 23, 25 and 27, 1906. Dr. Bishop says, "an adult male taken at Walsh, Alberta, July 12, is smaller, with smaller bill, than southern California examples of *hesperis*."

99. *Dolichonyx oryzivorus*. BOBOLINK.—Prof. Macoun found it at the east end of the Cypress Hills in 1894. I saw one at Crane Lake on June 13, 1905, but did not secure it. No others were seen.

100. *Molothrus ater*. COWBIRD.—Very abundant on the prairies, about the ranches and in the timber. Eggs were found in the nests of Western Vesper Sparrow, Clay-colored Sparrow and Western Savanna Sparrow. In one nest of the latter, found on June 23, 1906, were 4 eggs of the Cowbird and none of those of the rightful owner.

101. *Xanthocephalus xanthocephalus*. YELLOW-HEADED BLACKBIRD.—Very abundant in all of the sloughs and on the meadows and prairies surrounding them. Probably the most abundant bird of the whole region, certainly the most numerous in the localities it inhabits, where it fairly swarms. Hundreds of their nests were found in the bulrushes and flags, where the constant din of their voices was the dominant sound, and their striking colors made them always conspicuous. Nests containing eggs were found all through June and some of the young were able to fly as early as June 13, 1905.

102. *Agelaius phoeniceus fortis*. THICK-BILLED REDWING.—Very common around the sloughs and along the creeks, nesting in the flags and long grasses on the edges of the sloughs and in the shallower portions. Nests with eggs were found as early as June 5, 1905.

The series of Redwings that we collected proved very puzzling but we finally decided to refer them to this form, though they were far from typical.

Geographically they should be included under the new northern race, *arctolegus*, as described by Mr. Oberholser in a recent number of 'The Auk.' The measurements of my birds agree very closely with those given for *arctolegus* and they are certainly nearer to this form than to *fortis*, as he gives them.

I should hesitate to recommend the recognition of still another form in a group in which the distinctions are already so finely drawn, but am inclined to think that our birds are referable to *arctolegus* and will help to strengthen its validity as a subspecies.

103. *Sturnella magna neglecta*. WESTERN MEADOWLARK.—Abundant on the prairies. Frequently seen sitting on some wayside fence post or telegraph pole, pouring out its rich and beautiful song, a constant source of delight to the prairie traveler. Three nests were found in the long prairie grass, on June 6, 1905, and on June 18 and 24, 1906, each containing 5 or 6 fresh eggs. On July 18, 1906, Dr. Bishop caught a fully fledged young bird, that had been bathing in a lake and was so water soaked that it could not fly.

104. *Icterus galbula*. BALTIMORE ORIOLE.—Rare in the timber on Maple Creek. None were collected, but I saw two or three birds each season which I was quite sure were this species, May 29 and June 14, 1905, and June 5 and 30, 1906. I also found an empty new nest there on June 14, 1905.

Both Dr. Bishop and Dr. Dwight doubted my identifications as they did not collect any. But according to Prof. Macoun this species is common here, and specimens were taken by Mr. Spreadborough at Indian Head and Old Wives Creek in 1895.

105. *Icterus bullocki*. BULLOCK'S ORIOLE.—The only oriole taken was reported by Dr. Bishop as follows: "I shot a male along the timber near Maple Creek on July 2. This bird is typical [*bullocki*] except that it has the malar region, auriculars and sides of head black and many feathers of sides of neck tipped with black. Probably a hybrid with *galbula*." This may have been one of the birds that I saw and took to be *galbula*. Prof. Macoun says: "Breeding in considerable numbers in trees in the valley of the Saskatchewan at Police Point, Medicine Hat, Assa., May, 1894; not noticed further east."

Probably *galbula* reaches its western limit and *bullocki* its eastern limit somewhere in this vicinity.

106. *Scoleopaghus cyanocephalus*. BREWER'S BLACKBIRD.—Very abundant in the timber along the creeks, much in evidence and constantly scolding at us. Breeds in the low thick underbrush on the edges of the timber where its nests were so well concealed that we found only one. This contained 5 young on June 30, 1906.

107. *Quiscalus quiscula aeneus*. BRONZED GRACKLE.—Uncommon in

the timber on Maple and Skull Creeks. One nest was found, in a natural cavity in a box elder tree, containing 5 fresh eggs on June 1, 1905.

108. **Loxia curvirostra minor.** AMERICAN CROSSBILL.—Prof. Macoun reported this species as seen in flocks in the Cypress Hills in June in 1894 and 1895.

On May 31, 1905, I saw a flock of 6 crossbills flying over me among the pines in the Cypress Hills which I suppose were this species, though none were collected.

109. **Astragalinus tristis.** AMERICAN GOLDFINCH.—A pair were taken on Maple Creek on June 30, 1906.

110. **Astragalinus tristis pallidus.** PALE GOLDFINCH.—Goldfinches were fairly common in the timber, especially along Maple Creek, and with the exception of the pair referred to above, all proved to be much nearer *pallidus* than *tristis*. Prof. Macoun, however, recorded *tristis* only.

111. **Spinus pinus.** PINE SISKIN.—I did not see this species at all either season. Dr. Bishop says: "I collected one young of two birds along the timber at Maple Creek on July 2. On July 26 I secured two young birds from a small flock in the Cypress Hills, and heard others occasionally there on other dates."

112. **Calcarius ornatus.** CHESTNUT-COLLARED LONGSPUR.—Very common on the prairies. This and the following species were a constant source of enjoyment and interest; we never ceased to admire their beautiful plumage and their delightful little flight songs, during our long drives across the grassy plains. The habits and the songs of the two species were somewhat similar, but we soon learned to distinguish the males by the color patterns in the tails, which were conspicuous at a long distance. Though their ranges were by no means clearly separated, it seemed to me that this species was more abundant on the more grassy prairies and McCown's was commoner on the more barren plains.

Nests were found with fresh eggs on June 2 and 10, 1905.

Almost all of the Longspurs, of both species, had disappeared from the plains by August first.

113. **Rhynchophanes mccownii.** MCCOWN'S LONGSPUR.—Very common on the prairies in 1906, particularly on the barren hills north of Maple Creek.

We saw very few in 1905, but we spent very little time that season in the localities where we found them so common in 1906. Two nests with eggs were found on June 13, 1906. Their eggs were easily distinguished from those of the Chestnut-collared Longspur but their nests were similar, sunken into the ground in plain sight on the open prairie. They were not easy to find, however.

Their songs were similar to those of the foregoing species but somewhat louder and richer. The male makes about three song flights per minute, of about 8 or 10 seconds duration, feeding quietly on the ground during the intervals of 10 or 12 seconds. He rises slowly and silently to a height of 10 or 15 feet and then floats downward, on outstretched wings and

widespread tail, pouring out a most delightful, rich, warbling, bubbling song.

114. **Poecetes gramineus confinis.** WESTERN VESPER SPARROW.—Abundant on the prairies. Another familiar bird of the grassy plains but not so attractive as the Longspurs. Nests with eggs were found on May 29 and June 3, 1905, and on June 7 and July 12, 1906. A favorite victim of the Cowbird.

115. **Passerculus sandwichensis alaudinus.** WESTERN SAVANNA SPARROW.—Very common on the meadows and around the edges of the sloughs and lakes. Seen occasionally on the higher prairies. A nest with eggs was taken on June 5, 1905, and another on July 6, 1906.

116. **Coturniculus bairdii.** BAIRD'S SPARROW.—Uncommon, but quite a number of pairs were located in the grassy hollows on the prairies. These pairs were widely scattered but we could generally locate them by their peculiar songs in nearly all suitable localities. Their song is somewhat intermediate between those of the Savanna and the Grasshopper Sparrows. The birds are very shy and we experienced some difficulty in collecting them. No nests were found.

117. **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW.—I saw a few and collected one specimen in the Cypress Hills on May 31, 1905. Prof. Macoun recorded them as breeding there.

Dr. Bishop found them in the Cypress Hills, on July 28, 1906, keeping to the summits.

118. **Spizella socialis.** CHIPPING SPARROW.—Rare. I saw two and collected one of them in the Cypress Hills on May 31, 1905. Dr. Bishop also collected one on Mackaye Creek on July 11, 1906.

119. **Spizella pallida.** CLAY-COLORED SPARROW.—Very common in the underbrush along the creeks and among the sandhills. In the latter locality we found 5 nests in one day, June 3, 1905. The nests were in low underbrush, within a few inches of the ground, and almost invariably contained Cowbird's eggs.

120. **Junco mearnsi.** PINK-SIDED JUNCO.—"I secured a female and two young in the Cypress Hills on July 27, and a male and one young several miles away on the following day. No others noted." (Bishop.)

121. **Melospiza cinerea juddi.** DAKOTA SONG SPARROW.—Uncommon in the underbrush along Skull Creek and Maple Creek and in the Cypress Hills.

The birds which we collected were referred to this form, though I doubt if this form will stand the test of a much needed revision of the Song Sparrows of eastern North America. In my opinion there are at least two and possibly three eastern races worthy of recognition. To one of these forms, found on the Atlantic coast, our Saskatchewan birds and the North Dakota birds bear a close resemblance.

122. **Pipilo maculatus arcticus.** ARCTIC TOWHEE.—Uncommon in the Maple Creek and Skull Creek timber. No nests were found. "Tolerably common on Mackaye Creek." (Bishop.)

123. *Zamelodia melanocephala*. BLACK-HEADED GROSBEAK.—On June 14, 1905, in the Maple Creek timber, I heard a grosbeak singing which I thought was a Rose-breasted, but on investigation I was surprised to see a fine male Black-headed Grosbeak; I saw what was probably the same bird later in the day but was too close to it to shoot it. On June 16, 1906, about four miles farther up the creek, I was fortunate enough to find a nest of this species containing 3 fresh eggs, which I secured with the male bird, which was incubating.

Dr. Bishop saw another pair on Maple Creek on July 5, 1906. On Mackaye Creek, July 11, 1906, he and Dr. Dwight secured a pair of the birds and 2 eggs. This species is not recorded as occurring in this region by Prof. Macoun.

124. *Calamospiza melanocorys*. LARK BUNTING.—Not noted at all in 1905, except one doubtful record of a female seen June 2. Very common in 1906 on the prairies and hills north of Maple Creek and about Crane Lake. A nest with 4 young, under a little sage brush, was found on June 23, 1906.

This delightful songster, known as the "Prairie Bobolink," is another of the striking and attractive features of the prairies. Its flight song is particularly rich and joyous. "All through the breeding season each female seen seemed to have at least two males in attendance." (Bishop.) The males were certainly much more abundant, or more in evidence, than the females.

125. *Petrochelidon lunifrons*. CLIFF SWALLOW.—Locally common. A large breeding colony was found in a cattle shed at Reedy Lake. The nests were plastered onto the rough poles, supporting the roof on the inside. Many of them contained fresh eggs on June 10, 1905, and on June 25, 1906. Eggs were found as late as August 2, 1906.

126. *Hirundo erythrogaster*. BARN SWALLOW.—Fairly common about the ranches. Eggs were found on August 2, 1906.

127. *Iridoprocne bicolor*. TREE SWALLOW.—Rare. I recorded a few birds seen in the timber along the creeks in 1905 and saw one at Hay Lake on June 6, 1906. None were collected and none seen by the others in 1906. It was recorded, however, by Prof. Macoun at Indian Head, Crane Lake and Medicine Hat. Mr. Day found a nest with 4 eggs in the Skull Creek timber on June 9, 1905.

128. *Riparia riparia*. BANK SWALLOW.—Common. A few small colonies were found nesting in cut banks or sand pits.

129. *Ampelis cedrorum*. CEDAR WAXWING.—A few were seen, some of which were collected, in the Maple Creek timber on June 30 and July 5, 1906. Others were collected on Mackaye Creek on July 11 and in the Cypress Hills on July 27, 1906.

130. *Vireo olivaceus*. RED-EYED VIREO.—Dr. Bishop saw several and shot one in the Maple Creek timber on June 8, 1906. Recorded by Prof. Macoun as breeding at Indian Head.

131. *Vireo philadelphicus*. PHILADELPHIA VIREO.—One was secured by Dr. Bishop in the Maple Creek timber, on June 8, 1906, in the great wave of migrants that passed through on that day.

132. *Mniotila varia*. BLACK AND WHITE WARBLER.—Probably a common migrant. We saw a few in the Maple Creek timber on May 29, 1905, which were undoubtedly migrating, as none were seen later. None were collected.

133. *Helminthophila rubricapilla*. NASHVILLE WARBLER.—“In my notes for June 8, 1906, I wrote: ‘saw plainly a Nashville Warbler.’ This bird was within a few feet of me in the timber, and low down, so that I saw it plainly and hardly think I could be mistaken in the species.” (Bishop.) Not recorded by Prof. Macoun.

134. *Helminthophila celata*. ORANGE-CROWNED WARBLER.—Reported as a migrant by Prof. Macoun. “Common in families of flying young in the Cypress Hills, July 25–30. No adult males found. The young were all in juvenal plumage, or moulting into first winter.” (Bishop.)

Dr. Bishop called all his birds *Helminthophila celata oreastera* (Oberholser), the Rocky Mountain Orange-crowned Warbler.

135. *Helminthophila peregrina*. TENNESSEE WARBLER.—On May 29, 1905, I saw a bird, within 10 feet of me in the Maple Creek timber, which I was quite sure was a Tennessee Warbler, but none were collected. This species was reported by Prof. Macoun as a common migrant.

136. *Dendroica aestiva*. YELLOW WARBLER.—Abundant in the timber; the commonest warbler. A nest was found building on May 30 1905, and a nest with young on June 30, 1906.

137. *Dendroica auduboni*. AUDUBON'S WARBLER.—Mr. Eastgate shot a female with food in its mouth, in a grove of pines in the Cypress Hills on July 28, 1906.

138. *Dendroica maculosa*. MAGNOLIA WARBLER.—The only one seen was collected in the Maple Creek timber on June 8, 1906, an adult male, probably migrating.

139. *Seiurus noveboracensis notabilis*. GRINNELL'S WATER-THRUSH.—One was taken in the Maple Creek timber, on June 8, 1906, in the wave of migrants.

140. *Geothlypis tolmiei*. MACGILLIVRAY'S WARBLER.—I saw a few in the Cypress Hills, on May 31, 1905, but none were collected. Prof. Macoun reported it as breeding there. Dr. Bishop found it common there in families from July 25 to 30, 1906.

141. *Geothlypis trichas arizela*. PACIFIC COAST YELLOW-THROAT.—Uncommon in the underbrush along the creeks, in the Cypress Hills and in the drier portions of the sloughs. Dr. Bishop referred all the birds taken to this subspecies. Prof. Macoun recorded *brachidactyla* as a common summer resident.

142. *Setophaga ruticilla*. AMERICAN REDSTART.—A few were seen in the Maple Creek timber on May 29, 1905. Probably a common migrant. One was taken on Maple Creek on June 8, 1906.

143. *Anthus spragueii*. SPRAGUE'S PIPIT.—Entirely overlooked in 1905, probably because we did not know where and how to look for it or realize the difficulty of seeing it or hearing it. It was really fairly common on the prairies in 1906, frequently heard and less frequently seen.

The males spend much of their time way up in the sky, almost out of sight, and it is only occasionally that one can be seen, as a mere speck against some white cloud; in the blue sky it is almost invisible. But if one has sharp ears its faint song can be frequently heard. When it descends to the ground, as it does at long intervals, it is very shy and difficult to approach, flying off in long bounding flights. We succeeded in collecting very few birds, though we spent considerable time in fruitless chasing.

144. *Galeoscoptes carolinensis*. CATBIRD.—Fairly common in the timber and underbrush along the creeks. Two nests with heavily incubated eggs were found on June 25, 1906.

145. *Toxostoma rufum*. BROWN THRASHER.—Uncommon in the timber belts in 1906. Not seen at all in 1905.

146. *Troglodytes aëdon aztecus*. WESTERN HOUSE WREN.—Very abundant in the timber along the creeks, where it was the commonest and most ubiquitous bird and one of the most persistent singers. Nests in nearly every available hollow in the box elders. Numerous nests were found each season, with eggs, as early as June 5 and as late as June 30, 1906.

147. *Sitta canadensis*. RED-BREASTED NUTHATCH.—“Heard twice in a tangled thicket at the summit of the Cypress Hills on July 29, a Nuthatch that I believed to be this species. Was unable to get a glimpse of it.” (Bishop.)

148. *Parus atricapillus septentrionalis*. LONG-TAILED-CHICKADEE.—“Tolerably common in the Cypress Hills and the upper part of Maple Creek.” (Bishop.)

149. *Hylocichla fuscescens salicicola*. WILLOW THRUSH.—Common in the timber along the creeks, but very shy. Its Veery song was frequently heard in the dense shady thickets, but we seldom got even a glimpse of the birds and succeeded in collecting only two.

150. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.

151. *Hylocichla aliciae bicknelli*. BICKNELL’S THRUSH.—In the great wave of migrating birds, that swarmed through the Maple Creek timber on June 8, 1906, thrushes were very numerous. Most of them were probably of these two forms, but only two were collected, one of which proved to be *aliciae* and one *bicknelli*, so that we were unable to determine which was the commoner. Neither form was seen elsewhere or on any other date.

The specimen of *bicknelli* collected was a female and very small even for this race.

152. *Hylocichla ustulata almae*. ALMA’S THRUSH.—“Eastgate shot an *ustulata*, probably *almae*, in juvenal plumage, in a thicket of young poplars on the summit of the Cypress Hills on July 27. The parent, though heard, was so shy we could not see her.” (Bishop.)

153. *Merula migratoria propinqua*. WESTERN ROBIN.—Common in the Maple Creek timber. Nests with eggs were found on June 14, 1905, and June 5, 1906.

Prof. Macoun listed the eastern Robin in this region, but all of our birds were *propinqua*.

#### ERRATUM.

In 'The Auk,' Vol. XXIV, plate xviii, fig. 1, for "Nests of Western Grebe," read "Nests of California Grebe."

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### RED-SPOTTED BLUETHROAT OF ALASKA.

BY S. BUTURLIN.

IN Part IV, p. 15, of the monumental work of Dr. R. Ridgway, 'The Birds of North and Middle America,' the Alaskan specimens of the Red-spotted Bluethroat are mentioned under the name "*Cyanosylvia suecica* (Linnæus)."

Though having seen no specimens procured in Alaska I do not hesitate to state, that Alaskan specimens do not belong to the typical form, *Cyanecula* (or *Cyanosylvia*) *suecica suecica* (L.), so common in summer in Scandinavia and northern Europe generally, but are in fact identical with the East Siberian form, named by me<sup>1</sup> *C. suecica robusta* (in Russian in 'Psovaia i Rusheinaia Okhota,' *i. e.*, 'Hunting and Shooting,' 1907, No. 6, published 13 March, p. 87; in German in 'Ornith. Monatsb.,' Maiheft, 1907, p. 79).

First of all, the dimensions given by Dr. Ridgway for Alaskan specimens (*l. c.*, p. 16) are too large for *C. suecica* (L.) typ. but quite agree with those of *C. suecica robusta*, as will be seen from dimensions given below for different forms of this species. Secondly, it must be kept in mind, that Bluethroats are not met with migrating or wintering anywhere in America south of Alaska; therefore it is to be presumed, that birds summering in Alaska migrate in autumn westward to the mainland of Asia, and pass the winter there; but all Bluethroats of Eastern Asia belong to the form *robusta*.

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<sup>1</sup> Evidently after the fourth part of the great work above mentioned was in print.—S. B.

I procured during the summer of 1905 in the Kolyma's delta (between  $69^{\circ}$ - $69\frac{1}{2}^{\circ}$  N.) 27 specimens of this bird and carefully compared them with more than 150 specimens from other localities, chiefly in the St. Petersburg Academical Museum, and came to the conclusion, that there are three fairly distinguishable subspecies or geographical forms.

1. Small pale Caspian form, *C. suecica pallidogularis* Zarudn. (= *C. discessa* Madar.). Paler than typical form, especially the blue of the throat in the males very pale, wing in ♂ about 69-71 mm., exceptionally larger, but only 1 spec. out of 16 ♂♂ examined had it 73.5 mm., long; tarsus 26-28.

This form breeds in southeastern Russia from (including) Khar-kov Governm., where it meets however the typical form, through Caucasus and Transcaucasia and Transcaspian Province on one side and lower Ural and part of Kirghiz Steppe on the other as far east as Zaissansk in N. E. part of Russian Turkestan (about  $47^{\circ}$  N.,  $85^{\circ}$  E. fr. Greenw.). Seasonal migrations of this form are quite limited.

2. Typical European and West-Siberian form, *C. suecica* (L.) typ. Darker and larger than Caspian form, wing of ♂♂ normally 72-74 mm., rarely smaller, down to 70 mm., and only in 2 specimens among 50 males examined larger — up to 77 mm.; tarsus 26.5-27, only in 2 specimens (others, not those just mentioned) among fifty longer — up to 28 mm. Breeds from Scandinavia eastwards up to Yenesey, and much further south than generally supposed: down to  $50^{\circ}$  N. in Central Russia, as well as in Russian Turkestan (higher up hills, than *C. pallidogularis*), Yarkand and even Tibet. Winters in Africa and India.

3. Large, East Siberian form, *C. suecica robusta* Buturl. It is just a shade darker than the typical form, especially the rufous spot on the throat of males is darker, more rusty-chestnut tinged (but this color difference observable only in comparing series of skins). Wing of males about 74-78 mm. long, very rarely (in 4 specimens among forty) less, down to 72 mm. Tarsus 27.5-28.5 mm. long (only 1 specim. among 40 examined — and this single bird not one of four small-winged birds just mentioned — had tarsus shorter: 26.5 mm.). Breeds from upper (eastern) parts of Lower Tunguska valley and Monjero (*i. e.*, about from  $100^{\circ}$  E.

fr. Greenw.) eastwards, including Chukchi land and Anadyr River (and evidently Alaska), wintering in China.

WESENBERG, ESTHONIA,  
RUSSIA, Oct. 17, 1907.

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### THE GENERIC NAMES *MYCTERIA* AND *TANTALUS* OF LINNÆUS, 1758.

BY J. A. ALLEN.

THE genera *Mycteria* and *Tantalus* of Linnæus, as originally founded (*Syst. Nat.*, ed. X, 1758, p. 140), were both monotypic, *Mycteria* having the single species *M. americana*, and *Tantalus* the single species *T. loculator*. *Mycteria* (No. 74) has precedence, standing above *Tantalus* (No. 75) on the same page. The names *Mycteria americana* and *Tantalus loculator* both unfortunately relate to the same species, as long since pointed out by Lichtenstein, and later by others.

*Mycteria americana* Linn. has for its sole basis Marcgrave's *Jabiru-guacu*, which Lichtenstein states (*Abhandl. Berlin Akad. Wiss., Phys. Kl.*, 1816–1817 [1819], p. 163), on the basis of the original manuscript and drawings, "ist *Tantalus Loculator*, den die Figur auf p. 200 vorstellt." *Tantalus loculator* is based on the Wood Pelican (*Pelecanus sylvestris* on the plate) of Catesby's 'Carolina.' As explained by Lichtenstein, and as is evident on inspection, Marcgrave's figures on pages 200 and 201 of his 'Historiæ rerum Naturalium Brasiliæ' are transposed, so that his figure of the Jabiru is placed on p. 201, in the text relating to the Jabiru-guacu, and the figure of the latter in the text relating to the Jabiru. Linnæus makes no reference to the Jabiru, which Lichtenstein here (*l. c.*) named *Ciconia mycteria*, its first tenable systematic designation. Linnæus was thus misled into identifying the figure of the Jabiru as that of the Jabiru-guacu, he evidently basing his generic diagnosis on the wrongly placed figure of the Jabiru and his specific diagnosis on the description of the Jabiru-guacu, which is the Wood Ibis, his *Tantalus loculator*.

In accordance with universal custom, the amended Article 30 of the International Code of Nomenclature provides: "A genus proposed with a single original species takes that species as its type." Hence the type of *Mycteria*, regardless of the generic diagnosis, is *M. americana*, based on the *Jabiru-guacu* of Marcgrave, the Wood Ibis, of which, by virtue of its position on the same page, *Tantalus loculator* is a synonym. The proper name of the Wood Ibis is therefore *Mycteria americana*. The Jabiru being thus nameless, so far as Linnaeus is concerned, must bear the generic name *Jabiru*, provided for it by Hellmayr in 1906 (*Abhandl. d. K. Bayer. Akad. der Wiss., II Kl., XXII, Abt. 3, 1906, p. 711*), and the specific name *mycteria*, given it by Lichtenstein (*l. c.*) in 1819 = *Jabiru mycteria* (Licht.) Hellm.

Marcgrave's *Jabiru brasiliensis* is a large bird, with the bill eleven inches long and the legs two feet long, and entirely white, with the head, and also the neck for eight inches, naked, the skin black for the upper half and white for the lower half.

His *Jabiru-guacu* is a smaller bird, the size of a stork, with the bill seven and a half inches long and the legs about fourteen inches long; there is a bony mitre or crown on the top of the head; the neck is ten inches long, the upper half of which, together with the head, is not covered with feathers but with a scaly gray skin, the scales being whitish. It is also a white bird, with the tail and wing-quills black with a purplish gloss. Linnaeus's *Mycteria americana* is described as: "Magnitudo Ciconiae, alba, remigibus rectricibusque nigro-purpurascensibus." Evidently this is based on Marcgrave's "caudam habet brevem et nigram," and "Alae albæ, remiges illarum pennæ nigrae, rubino colore transplendente in nigro," in his description of the *Jabiru-guacu*.

The *Jabiru-guacu* has sometimes<sup>1</sup> been identified with the Maguari, *Euxenura maguari* (Gmel.), which has, however, a feathered and not a naked head and neck, and no horny shield on the head; but in size, and in the coloration of the wings and tail, the birds are similar; but 'tail short' applies better to the former (or Wood Ibis) than to the latter, and the bill is curved (shown in Marcgrave's figure), as in the Wood Ibis, and not straight and stork-like, as in the Maguari.

<sup>1</sup> Cf. Ridgway, Bull. U. S. Geol. and Geogr. Survey Terr. (Hayden), IV, 1878, 250; Berlepsch, Journ. f. Orn., 1887, 32.

THE BIRDS OF CUSTER AND DAWSON COUNTIES,  
MONTANA.<sup>1</sup>

BY E. S. CAMERON, F. Z. S. L., M. B. O. U.

134. *Poecetes gramineus confinis*. WESTERN VESPER SPARROW.—Tolerably common; arriving about the end of April. A few remain to breed. On June 17, 1896, I found a nest (a deep cup in the ground amidst the sage brush), containing three eggs of this sparrow and three of the Cowbird.

135. *Passerculus sandwichensis alaudinus*. WESTERN SAVANNA SPARROW.—Captain Thorne gives this bird as common and breeding. I have only come across it two or three times at the migration periods.

136. *Coturniculus bairdii*. BAIRD'S SPARROW.—An irregular fall migrant. I have observed this sparrow on the prairie in large numbers during September, but have no notes of its occurrence at any other time. A flock frequented the garden at my ranch, Custer County, in September, 1893. They were preyed upon by a Sharp-shinned Hawk, and by the cat, which on the thirteenth brought me two good specimens. Measurements in inches were: length 5½; wing scarcely 3; tail 2½; extent 9¼. Feet and legs flesh color, fading to pale brown. Bill flesh color, with culmen dark brown. Iris black. A large flock arrived at another ranch where I lived near Terry, on September 6, 1902, and remained for four days, thus affording an ample opportunity for watching them. These birds are very fond of perching on buildings and fences. Unless specimens are shot for identification it is often difficult to diagnose the countless flocks of migrant sparrows which flit through the sage brush. Nevertheless I believe that this species without yellow at the bend of the wing is much commoner than the previous bird. Baird's Sparrows came to drink at my water-troughs in Dawson County during September, 1905.

137. *Coturniculus savannarum perpallidus*. WESTERN GRASSHOPPER SPARROW.—Rare. I have seen this Sparrow once only, on September 16, 1904, when one came to my water-troughs in Dawson County, in company with Clay-colored Sparrows and Chipping Sparrows.

138. *Chondestes grammacus strigatus*. WESTERN LARK SPARROW.—Very abundant summer resident in both counties.

Lark Sparrows arrive early in May, and are the most pugnacious little birds I have ever seen. The cocks fight on the ground or in the air indifferently, and are then so oblivious to their surroundings that five or six fighting on the wing have nearly hit me in the face. When all other birds are suffocated by the heat, and even the doves are unable to coo, Lark Sparrows keep up their continuous harsh croaking and indulge in

<sup>1</sup> Concluded from Vol. XXIV, Oct., 1907, p. 406.

brief combats. On my first coming to Montana, these birds, so numerous and tame about ranch buildings and doors, reminded me of the sparrows on English farmyards. I have found their nests, which are invariably placed under a sage bush, and lined with grass, in pine hills, badlands, and open prairie. On an average the full clutch of five eggs is laid by the middle of June, and the young are fledged in the middle of July. The female incubates about twelve days. I have also seen eggs in July, but these were doubtless for a second brood. In the pairing season, the males give a sort of display, during which they bow, strut and spread their long tails.

139. **Zonotrichia querula.** HARRIS'S SPARROW.—Rare. I observed a single Harris's Sparrow associating with White-crowned Sparrows on May 24 and 25, 1907, near Knowlton, Custer County.

Captain Thorne has the following: "Seen only in the fall of 1889 (September 22, to October 13). All I took were juveniles."

140. **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW.—Tolerably common in both counties. A very regular spring migrant. Notes kept for a number of years show that it almost always arrives during the first week in May, and may remain until the end of the month. To my knowledge, it has only once arrived in April — on April 21, 1900. These sparrows used to sit in the brush at my north window (see introduction), and lent by their presence a further charm to the flowering choke-cherries. In my opinion they are the handsomest sparrows which visit Eastern Montana.

White-crowned Sparrows are not often observed here on the fall migration, but I have a few records of their appearance about the end of September. I found them more numerous on October 1, 1893 (the occasion of the first snowstorm), than at any other time. Associated with Juncos, separate flocks were seen, at intervals, for a mile down the creek, on my ranch in Custer County. White-crowned Sparrows are birds of the river bottoms, and merely pass through the pine hills.

141. **Zonotrichia leucophrys intermedia.** INTERMEDIATE SPARROW.—Captain Thorne states that this sparrow is "tolerably common in spring and fall." I have not noticed it.

142. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.—Rare migrant. I saw a pair on Fallon Creek, Custer County, September 6, 1896.

143. **Spizella monticola ochracea.** WESTERN TREE SPARROW.—Abundant on the migrations in both counties. May arrive at any time from the end of February to the end of March. I have not seen this sparrow in December or January, although Captain Thorne gives it as "usually abundant during the colder months." Very erratic, remaining for a few days or for a month.

On March 26, 1907, near Knowlton, Custer County, a flock of about 250 Tree Sparrows arrived early in the morning during a snowstorm. At first, this large flock split up into small companies of from 25 to 50 in each, which came boldly to the windows and doors, covered the roofs of the

buildings, and perched on the withered horse-weed stalks. Afterwards, they mixed with an army of Horned Larks, when this host of birds, numbering many hundreds, spread over some three acres of ploughed land which was entirely overgrown with Russian thistle—a most noxious weed. At the same date, a flock of about fifty birds frequented the adjoining ranch of Mr. J. H. Price. These sparrows remained during the entire month of April. Tree Sparrows are again seen about the middle of October, and immense flights, mixed with a few Juncos, then pass through the scattered pines. Their progress is slow, as the flocks constantly alight to feed on a plant which covers the hill sides; doubtless the same weed alluded to by Dr. Coues in his graphic account of Tree Sparrows feeding. (Birds of the Northwest, p. 147, 1874.)

144. *Spizella socialis*. CHIPPING SPARROW.—Very abundant summer resident. It may be seen in countless flocks on spring migration. One of the largest invasions of Chipping Sparrows was in 1893, when they arrived at my ranch in Custer County, on March 11, and continued to come in ever increasing numbers until the climax was reached on April 7, the occasion of a howling blizzard. Then an army of Chipping Sparrows and Desert Horned Larks, over a thousand strong, took possession of a disused garden to feed upon a wild plant with a seed like millet locally called "horseweed." All that morning a seemingly continuous stream of these small birds poured in, and, as I had never before seen so many together, I sallied out to watch them although scarcely able to face the storm. They were remarkably tame and Mr. H. Tusler, of the ranch above, twice caught three Horned Larks with a five-pronged stable fork, by laying it on another similar flock which visited him. The scene at my ranch was rendered still more interesting by the manœuvres of three Marsh Hawks, a Sparrow Hawk and a Northern Shrike, which continually harassed this immense company of birds, but though they killed a good many Horned Larks I could not discover that any Chipping Sparrows were taken. Our cat, however, captured many specimens of the latter, which she brought to me.

Exceptionally large flights of Chipping Sparrows were noticed at my ranch in Dawson County in 1905 and 1906. In 1905, flocks of unusual size began to arrive on May 10, and on May 16 the birds, mixed with Clay-colored Sparrows, swarmed over the neighboring country. When we were riding through the hills at this date, the horses constantly flushed hundreds of both species from the sage brush at their feet. On May 17, 1906, Chipping Sparrows passed throughout the day, flying low to the northwest across a strong north wind. These late migratory movements have no connection with the resident birds, which arrive in March. Chipping Sparrows nest here in low cedars, but occasionally in sage brush, and rear two broods in the year. In July numbers may be seen feeding the full-fledged young upon grasshoppers, while others are sitting upon three or four eggs. I have never seen more than the latter number, and three is usual. The earliest date at which I have found eggs is May 28,

and the latest July 15. I have several times seen a Cowbird's egg among those of the sparrow.

At the water-troughs on my ranch in Dawson County there are excellent opportunities for observing the habits of these sparrows, as several pairs nest annually in the cedars which grow around them. The nests are usually slight, unfinished structures of dried grasses, but may be more elaborate with horse and cowhair interwoven. As with other birds here, the partially feathered nestlings suffer much from the sun's rays and the parents shade them. In July, 1904, an Arkansas Kingbird and a Chipping Sparrow sat on nests side by side in two opposite forks of the same cedar branch. I have never observed Chipping Sparrows here after the first week in November. This form is referable to *socialis* and not to var. *arizonæ*, as the adult males have the crown continuous bright chestnut.

145. **Spizella pallida.** CLAY-COLORED SPARROW.—Common sometimes on the spring migration; rare at other times. On May 16, 1905, hundreds passed in company with Chipping Sparrows when our cat brought in a good specimen. Measurements in inches were: Length 5; extent 7½; wing 2½; tail 2½. Captain Thorne gives it in his list as breeding. I observed these sparrows at different dates during August and September, 1904, associating with Chipping Sparrows.

146. **Spizella breweri.** BREWER'S SPARROW.—Captain Thorne gives this sparrow as "Common, breeds." I have not recognized it.

147. **Junco hyemalis.** SLATE-COLORED JUNCO.—Common spring and fall migrant. Capt. Thorne states that some remain to breed but I have never found a nest. At my ranch in Custer County, Juncos arrived in large numbers early in April, and were exceedingly tame; they associated with Desert Horned Larks and Chipping Sparrows about the buildings. In April, 1893, the female of a pair which frequented the stable perched on a horse's ear, and in April, 1896, I twice caught a Junco in the stable with my hand. When the weather became warm they all departed to reappear again about the first of October. Juncos do not care to stay long in the pine hills, and I have only noticed small flocks of passing migrants at my ranch in Dawson County.

148. **Melospiza fasciata.** SONG SPARROW.—Rare.. I have no records. Captain Thorne gives: "One female taken April 16, 1889."

149. **Melospiza lincolni.** LINCOLN'S SPARROW.—Rare. On May 10, 1897, two were seen in the shrubbery at my window (Custer County). On August 27, 1904, two came to my water-troughs in Dawson County. Captain Thorne saw it twice only in 1889.

150. **Pipilo maculatus arcticus.** ARCTIC TOWHEE.—Common in both counties. Nested on both my ranches. The average time of arrival is during the second week in May, the 6th being the earliest date I have recorded. The grass nests of Towhees are placed on the ground in clumps of wild roses or sage brush and contain four or five eggs. These are laid about the middle of June; nestlings are hatched at the end of the month, and fledglings may be seen flying about in August. All the birds leave at

the end of September. On June 20, 1898, I found a nest in a rose bush which contained five eggs of the Towhee and two of a Cowbird.

Towhees are very common in the woods along the Yellowstone bottom, but are shy birds, flitting about in dense cover, although their harsh croak resounds on all sides.

151. *Zamelodia melanocephala*. BLACK-HEADED GROSBEAK.—Captain Thorne records this species as "Tolerably common. Breeds." I have never seen it.

152. *Cyanospiza amoena*. LAZULI BUNTING.—Tolerably common summer resident in both counties. Appears to be a very irregular migrant, as I have recorded its appearance at varying dates from April 19 until the middle of June. I never saw it in Montana until 1896. Lazuli Buntings nest in the hollows of dead pines in places similar to those chosen by Flickers, and also use the deserted nesting holes of other species. On June 12, 1904, six young flickers fell victims to some predatory animal (it was supposed to be our cat), in their hole in a burnt pine near my house in Dawson County. Thereupon a pair of Lazuli Buntings made their nest of dried grass, lined with feathers, in the same situation on July 2, and four eggs were laid. Another pair took possession of a hole in a dead pine which in the previous year (1903) had been occupied by a pair of Chickadees. I once found the nest of Lazuli Buntings in a hole in a sand rock cliff, but this struck me as a rare occurrence. The full complement of eggs is five. Lazuli Buntings hover like Kestrels on the open prairie when searching for grasshoppers or grubs on which to feed their young. They leave about the first of October.

153. *Calamospiza melanocorys*. LARK BUNTING.—Commonest of the summer residents in Custer County, arriving about the second week in May. It is invariably called Bobolink, and is confused with that bird. The males precede the females by about five days and, when all have arrived, flying hosts are seen strung out for about a quarter of a mile. Lark Buntings are common in Dawson County, but I have not noticed them in such immense numbers as in Custer. Although essentially prairie birds, the flocks rest in the trees when migrating through pine hills. Their nests are more plentiful in fenced pastures than elsewhere, a fact explained by the bird's fondness for perching on the wires. I have observed five nests in one small pasture when riding through it, and, had search been made, doubtless many more might have been discovered. The usual number of five eggs is laid by June 1 and the male shares the duties of incubation with his mate. The young are fledged by July 1, and, as soon as they can fly weakly (about the middle of the month), sit on the wires with their parents which feed them on grasshoppers. A nest on my ranch in Custer County, contained three eggs on May 25, seven eggs on May 29, and six newly hatched young on June 10, which makes the time of incubation about twelve days. Before the flocks leave in the fall the males have assumed the plumage of the females.

The Lark Bunting sings loudly on the wing and, as Dr. J. A. Allen has

pointed out: "In its song and the manner of its delivery it much resembles the Yellow-breasted Chat [*Icteria virens*], like that bird rising to a considerable distance in the air, and poising itself by a peculiar flapping of the wings during its utterances, then abruptly descending to the ground to soon repeat the manœuvre." (*Birds of the Northwest*, by Elliott Coues, p. 164, 1874.)

154. ***Progne subis.*** PURPLE MARTIN.—Not common. Martins have nested for many years at the ranches of Messrs. Heywood, Daly and Harry Schlosser near Knowlton (Custer County) where boxes have been provided for them. The birds arrive about May 15. Mr. and Mrs. Bowman have watched Bronzed Grackles stealing their eggs. Mrs. W. S. Haley has observed Purple Martins in Dawson County. Two were seen by me among cottonwoods of the Yellowstone near Terry on June 7, 1905. Dr. J. A. Allen found Purple Martins more or less frequent along the Yellowstone from the mouth of Tongue River to Pompey's Pillar, August 1st to 15th.<sup>1</sup> In his 'Birds of Fort Custer' (which four years ago was within Custer County boundaries), Dr. Edgar A. Mearns gives them as "Numerous in the timbered river bottom."<sup>2</sup>

155. ***Petrochelidon lunifrons.*** CLIFF SWALLOW.—Very abundant in both counties. My records show that it arrives at varying dates from May 7 to May 27. Nests in colonies on buildings at almost all ranches where allowed to do so, in the badlands, and against vertical cliffs above the Yellowstone. There have always been large colonies nesting around the Northern Pacific engine tank and section house at Terry. Two broods are raised in the year. Mr. Walter Lindsay, of the Cross S ranch on Mizpah Creek, informed me that in 1888, a rattlesnake climbed the veranda poles and devoured all nestling swallows within reach.

Some ranch owners unwillingly sweep down Cliff Swallows' nests under the impression that their presence brings bedbugs into the houses. While this is denied by scientists I am compelled to believe it, as so many impartial investigators have assured me that the introduction of such vermin synchronized with the first nidification of the birds.

156. ***Hirundo erythrogaster.*** BARN SWALLOW.—Common in both counties. Records kept since 1893 show that the average date of arrival near Terry is May 13. This is one of the best known birds; I think it would be impossible to find a ranch without swallows nesting in the stable or outbuildings, and even in rooms to which they can gain access. Barn Swallows generally rear two broods a year, of four or five in each, and the last nestlings may not be full-fledged until the end of August. The young birds fly about during the day but return to their nest at night, and those that cannot find room inside sit about near it on the stalls. I thought it a remarkable circumstance that in 1902 a single pair of swallows built two nests in my stable near Terry, the second above the other and a little

<sup>1</sup> Notes on the Natural History of portions of Montana and Dakota, 1874.

<sup>2</sup> Condor, Vol. VI, p. 21, 1904.

to the left. When the five nestlings became full-feathered (on August 2) they were inconveniently crowded, and two contrived by some means to reach the upper nest, remaining there until August 9, when all could fly.

157. *Iridoprocne bicolor*. TREE SWALLOW.—Rare. Dr. J. A. Allen found this swallow: "Common at one locality on the Musselshell, but not seen elsewhere."

Captain Thorne mentions that some of these swallows nested at Fort Keogh. I never happened to recognize this species in Montana, although I have seen it just across the line in Wyoming. Mr. Dan Bowman has observed these birds on the Powder River and recollects a pair having a nest in the roof of an old shed in the eighties. He further informs me that during the end of May, 1894, a pair of Tree Swallows frequented a Martin box on a high pole, placed by a cottonwood, on his Powder River ranch. The hopes that they would nest there were not fulfilled.

158. *Tachycineta thalassina lepida*. NORTHERN VIOLET-GREEN SWALLOW.—Dr. J. A. Allen met with this species "near the mouth of Tongue River, and frequently on the Yellowstone above this point." In his 'Birds of Fort Custer' Dr. Edgar A. Mearns gives this swallow as: "Abundant along the bluff bank of the Bighorn River." Mr. Dan Bowman has seen it on the Powder River but cannot give dates. I have not observed it.

159. *Riparia riparia*. BANK SWALLOW.—Not common. Dr. J. A. Allen found a "large colony on the banks of the Yellowstone, near the mouth of Custer Creek (Custer County). Here full-fledged young were obtained August 1st." At the present time I only know of one colony, in a cut-bank on a tributary of Whitney Creek, Custer County. Other nesting sites I have come across were deserted, but Mr. Dan Bowman has seen colonies elsewhere. This is the same bird as the Sand Martin in Great Britain.

160. *Ampelis garrulus*. BOHEMIAN WAXWING.—Abundant. A most interesting and predominant winter resident. I have met with large flocks everywhere in both counties from the Powder River to the Missouri. "Professor Baird mentioned that Mr. Drexler saw 'millions' on Powder River, in flocks rivalling in extent those of the Wild Pigeon."<sup>1</sup>

Bohemian Waxwings arrive about the end of October and leave about the end of March, thus being with us for five months. At my ranch near Terry flocks came to my north window, where the bright-plumaged birds presented a charming sight from within the room as they picked off the remnant of withered cherries amid the snow-weighted cotton of the clematis. In Dawson County Waxwings were constant visitors to my water troughs. They are among those species which always try to get water even when deep snow covers the ground. At Knowlton during the severe winter of 1906-07 a flock came regularly to a large open spring at Messrs. Archdale's ranch. When hunting mule deer on Cedar Creek (which

<sup>1</sup> Birds of the Northwest, by Elliot Coues, p. 92, 1874.

rises in Custer County, but runs into the Yellowstone in Dawson County) I had daily opportunities of observing thousands of Waxwings which frequented the extensive thickets surrounding my camp. Here they subsisted entirely on cedar berries, which have a sweet taste and tinge the excrement of the birds red, so that familiar roosting places in the high pines are infallibly marked by the red-stained snow beneath. In general the winter food of Waxwings consists of cedar berries, buffalo berries, and wild rose hips, in this respect entirely coinciding with that of Sharp-tailed Grouse which are also very numerous in these woods. The latter birds were a great nuisance to me when still-hunting deer, for, although the complacent Waxwings never gave the alarm, the Grouse, when disturbed, flew into the trees in a spray of snow and with a most unnerving cackle — a signal for all the deer within ear shot to "quit the country." When following a fresh deer trail a flock of Waxwings would shoot over an opening but a few feet above my head, and alight, despite my presence, to pick off the berries near at hand. On these occasions I have seen the old birds feed the young ones as late as the end of January. The loud rushing noise of their wings swept through the silent cedars with a familiar and welcome sound which the deer were unaccustomed to associate with danger. As these Waxwings had no fear of man, their perplexing plumage could be examined at very close range. Only a small proportion had yellow primary bands; in the great majority these were white. Most birds had no red sealing wax appendages visible and were presumably the young of the year. Others, besides showing white edging to the ends of all the primaries except the two first, had four wax tips on the secondaries. These may have been birds of eighteen months old which had moulted twice, having regard to the fact that the Waxwing moults only once a year — in October. A few of the birds had brilliant yellow wing-bars and numerous vermillion appendages, and I concluded that this small minority were old birds. "The fullest information on this subject is to be found in a paper by the late Henry Stevenson of Norwich, published in the 'Transactions of the Norfolk Naturalists Society' (Vol. III, pp. 326–344). He dissected sixty-eight specimens of the Waxwing — forty-one males and twenty-eight females — and found that the number of waxlike tips on the wing feathers is variable. Of the males examined, three had four tips; seven, five; fourteen, six; fourteen, seven; and three, eight tips. Of the females one had two tips; four, three; seven, four; six, five; seven, six; two, seven; and one, eight tips."<sup>1</sup>

Waxwings, more than any other small birds here, appear to fly for the mere pleasure of flying. When snow lies thick upon the branches of the cedars, and is held imprisoned between the needles of the pines, while in the frosty air outside long streamers of blue, red, and yellow light radiate from the sun, these birds are constantly on the wing. The flock selects a

<sup>1</sup> Natural History Editor of London Field, Feb. 18, 1893, in reply to a correspondent.

tree from which at intervals the birds gyrate in widening circles, sometimes altogether and sometimes only a part of them, as though impelled to exercise for the sake of warmth on such a wintry day. They seem to prefer dead trees, most likely because the view from them is less obstructed, and are so densely massed that an incredible number might be killed by a shot. Although they habitually rest in trees, I have twice seen a large flock alight on the ground, but regard this as very unusual. Waxwings have always an abundance of food, and can support extreme cold as well as any of the circumpolar birds. Nevertheless, at times I have seen them greatly affected by it. Some such days indeed I shall always remember, one especially in January, 1896, when a blizzard from the north, combined with the low temperature of 31° below zero Fahrenheit and deep snow, made discouraging atmospheric conditions. Not caring to stay in camp, and wanting meat, I had gone out on foot in the endeavor to shoot a deer. The whirling snow from below met that driven from above, so that an encompassing snow-cloud hid all objects outside the cedars, while the view inside, usually curtailed, was now clearest in their sheltering depths. As may be supposed, all the animals on the adjacent plains had crowded into this haven, even such unlikely visitors as antelope and Sage Grouse. I saw altogether nine deer, one in picturesque pose eating cedar berries only a few yards distant, but so intense was the cold I found it impossible to discharge my rifle. On this day and other similar days, the Sharp-tailed Grouse never left their burrows at all, and the Waxwings were so stupefied as scarcely to move out of my way in the brush. It is in weather of this kind that they become the prey of ranch cats. A very fine male which our cat brought to me on Feb. 13, 1899, was quite fat after eighteen days of a cold wave during which 45° below zero was registered. I do not think that many Waxwings fall victims to Prairie Falcons, as they betake themselves to thick cover when the latter are about. On March 6, 1904, my wife and I approached within two yards of a flock of Waxwings, which refused to leave a low cedar when a Rough-legged Hawk was sailing above. The winter of 1906-07 was the most severe in my Montana experience, and Waxwings, tamed proportionately to the cold, frequented the haystacks and corrals at Knowlton in company with flocks of Horned Larks and Snowflakes. They even entered the town of Miles City, and Mr. H. B. Wiley wrote, under date of Feb. 4, 1907: "I found a bunch of about fifty Bohemian Waxwings in my yard eating the frozen apples."

As the migration period approaches Waxwings become very restless and fly backwards and forwards with great swiftness. Unusually warm weather deceives them into the belief that spring has come, when they adopt a direct mode of flight instead of circling. When flying the birds keep up an incessant twittering, so that high passing flocks are immediately recognized by their call of *zir-r-r-r* — a sort of trill. Seebold writes the notes *cir-ir-ir-ir-re* and compares them to the song of the Redpoll.<sup>1</sup> The

<sup>1</sup> British Birds, Vol. II, p. 5.

weak voice of a single Waxwing is inaudible except at very close quarters, but hundreds together produce quite a volume of sound.

161. **Ampelis cedrorum.** CEDAR WAXWING.—Tolerably common summer visitor in both counties. Notes kept from 1894 show that it arrives regularly during the first week of June, and once (in 1906) on May 31. Very few pairs remain to breed but transient flocks, of from twenty to thirty birds, occur which make a twittering similar to the Bohemian Waxwing. Two or three pairs of these flocks remained throughout the summer on my ranch (Custer County), which was a favorite haunt of Cedar Waxwings, both on account of the thickets of wild fruit trees and the abundance of water and shade on which these birds seem very dependent.<sup>1</sup>

At the time of writing (1907) I am not aware that Cedar Waxwings (which are the latest breeders of any birds here) nest anywhere else in the two counties. In August, 1899, I paid particular attention to Cedar Waxwings, as a small flock of twenty birds had been about the ranch since June 1. One pair made a nest in a thicket below the house and the female was sitting on three eggs on August 19. The nest would not have been discovered but for the actions of the male bird which was constantly perched on the top of an old box elder which towered above all the other trees in the grove. This induced me to search diligently below until I found the nest, a large structure of coarse grass and twigs, which was interwoven with four small shoots of a young box elder and thus held tightly against the parent stem. The young Waxwings seemed to mature very quickly, for although their feathers had only just begun to show on August 26, on September 2 I saw them leave their nest and all fly up into the tree at my approach. In color they were plumbeous gray, with some black about the head, a yellow border to the tail, but no sign of a crest. The whole family remained in the vicinity of the nest for some days, and I saw the parents feeding the young on grasshoppers, which are the universal 'stand-by' of almost every bird here.

These Cedar Waxwings had an extraordinary characteristic, that of drawing themselves to their utmost height, and standing perfectly rigid on a branch with closed eyes, when they appeared dazed or blind. I have remarked this practice in caged canaries, but never before in wild birds. The female indulged this habit to a ridiculous extent, before her nestlings were fledged and, whereas the more wary male took care to keep well out of my reach, she allowed me to set up a camera a few feet away, and to move around her as close as I pleased without taking any notice unless almost touched. In this respect the newly fledged young imitated her. Perched in a row along a branch, with the male higher up in the tree, this was indeed the most impassive bird family I have ever seen. An attempt to catch a fledgling could alone arouse them from their trance, in which event the excited parents would alternately raise or depress their

<sup>1</sup> See introduction, Auk, Vol. XXIV, p. 246.

crests, while all the birds would start in chorus with their "low lisping call."

162. *Lanius borealis*. NORTHERN SHRIKE.—Not common but seen at intervals in fall, winter and spring. It possesses great strength, and will attack birds as large as itself. On April 8, 1893, I saw an impaled Horned Lark in a Shrike's larder on a low bush. On March 26, 1904, I saw a Shrike hawking a Redpoll just as a Falcon would do. The unfortunate Redpoll ringed higher and higher in vain efforts to keep above its pursuer, which, after twice almost seizing the quarry in mid-air, compelled it to fly straight for about half a mile. The exhausted Redpoll then took refuge in high sage brush closely followed by its assailant. On October 16, 1906, a Tree Sparrow pursued by this Shrike found refuge in the cedars surrounding my water-troughs in Dawson County. Its victim having escaped, the Shrike sat on a branch and permitted me to examine it at close range.

This Shrike has a pleasing song which may be heard in winter after all the migratory song-birds have left.

163. *Lanius ludovicianus excubitorides*. WHITE-RUMPED SHRIKE.—Common and ubiquitous summer resident of both counties. One of our tamest and most confiding birds which alights on the wood pile, or anywhere at the ranch door in close proximity to human beings. There were usually two Shrikes' nests on Ash Creek, on which my ranch near Terry was situated. A nest found June 25, 1894, containing five young birds nearly ready to fly, was wedged between two upright cottonwood stems above the water, and appeared to be in a precarious situation. It was, however, really supported from below by a small snag.

In 1898, this peculiar site was again chosen by the Shrikes, and six eggs were laid by June 16. Another nest near the above, in the fork of a box elder, contained three newly hatched nestlings at the same date. These birds kept well out of the way when I was in their vicinity, and thus differed from another pair which nested annually in a cedar on my Dawson County ranch. The latter fiercely resented any approach to their nesting site, and would fly straight at me, chattering and snapping their bills, on the few occasions that I disturbed them. Indeed, after the young were hatched, it was necessary to protect my head from the female with my hands.

164. *Vireo olivaceus*. RED-EYED VIREO.—Tolerably common on the spring migration. I have not found it breeding in either county. In his list above quoted Dr. J. A. Allen states that this species is "Common wherever there is timber, from the Missouri to the Musselshell." A mixed flock of these Vireos and Yellow Warblers arrived at my ranch (Custer County) on May 20, 1893. (See also No. 165.)

165. *Vireo gilvus*. WARBLING VIREO.—Tolerably common in spring. Captain Thorne says that it breeds, but I have not found a nest nor observed this bird after the end of May. On May 16, 1899, at my ranch (Custer County), a flock mixed with Red-eyed Vireos were flying north,

when some entered the open door of the netted-in veranda and became prisoners.

Warbling Vireos were visitors to my water-troughs in Dawson County. I have noticed them eating wild rose leaves.

166. *Helminthophila celata*. ORANGE-CROWNED WARBLER.—Captain Thorne gives this warbler as "common in April and May." I have seldom seen it. About half a dozen of these birds were observed by me associating with Yellow Warblers at Mr. J. H. Price's ranch (Knowlton) on May 27, 1907.

167. *Dendroica aestiva*. YELLOW WARBLER.—Abundant summer visitor to both counties, arriving about the middle of May. Scarce in the pines. Nested all over my ranch near Terry in trees or bushes indifferently. Of four nests examined in the brush at our north window on June 22, 1893, two contained young birds. Their mothers showed many signs of distress, and performed antics in the bushes near to attract my attention. These nests were beautiful soft cups, of dried grass with wool and hair interwoven, placed in the forks of saplings. One nest enclosed a young choke cherry, and another small dead tree as well.

168. *Dendroica coronata*. MYRTLE WARBLER.—Tolerably common on the spring migration but usually met with in small numbers. A flock was seen on Whitney Creek (Custer County), associating with Yellow Warblers, on May 7, 1893. Another flock appeared at my ranch near Terry on May 2, 1894. I have noticed this warbler in the pine-hills and river valleys alike.

169. *Dendroica striata*. BLACK-POLL WARBLER.—Captain Thorne gives this bird as "Common in May." I have not observed it.

170. *Dendroica townsendi*. TOWNSEND'S WARBLER.—Rare. I saw the bird for the first time on May 18, 1894, when an adult male came to the north window of my ranch in Custer County. Like the Redstart it was strongly attracted by the flies inside the glass, and remained for a considerable time in the bushes and creepers which grew almost against it. I was thus enabled to watch the lovely warbler from within the room. On May 11, 1896, the same bird (or another) was again observed under exactly similar circumstances.

171. *Seiurus aurocapillus*. OVEN-BIRD.—Rare. Captain Thorne took a male on July 23, 1888. I have not seen it.

172. *Seiurus noveboracensis notabilis*. GRINNELL'S WATER-THRUSH.—Rare. Captain Thorne mentioned: "One juvenile taken Sept. 12, 1889." On May 24, 1905, I observed a single bird in cottonwoods along the Yellowstone at Mr. W. S. Haley's ranch in Custer County.

173. *Geothlypis trichas occidentalis*. WESTERN YELLOW-THROAT.—Dr. J. A. Allen found this species "More or less common along all the wooded streams, from the Missouri to the Musselshell, and quite abundant at favorable localities." Captain Thorne has a record of four examples in spring. I have not come across it.

174. *Icteria virens longicauda*. LONG-TAILED CHAT.—Common sum-

mer visitor along the rivers and creeks, arriving about May 25. Accidental in the pines. Breeds. During the pairing season the male is conspicuous in the tree tops and has a loud song of much sweetness although each passage ends in a croak. While nesting the birds become very retiring in their habits and are rarely seen. A nest found June 11, 1894, in a thicket of wild roses and gooseberry bushes, on the bank of the Yellowstone, contained three eggs of the Chat and one egg of a Cowbird. A Long-tailed Chat came to our north window on May 25, 1893, and endeavored to reach the flies through the glass. We therefore killed a number of blue bottles, which were threaded on a string and hung outside the window. The bird then performed a number of strange antics in order to release the flies, recalling the Old World Robin (*Erythacus rubecula*), both by its confiding manners and habit of looking at us with its head on one side.

The aerial evolutions of Long-tailed Chats during and after the nesting season are very remarkable. As I rode at my ranch (Custer County) on July 9, 1894, five Long-tailed Chats were crossing an extensive area of trees and brushwood below me. The first bird noticed I mistook for a detached leaf, but, on looking again, I saw the other birds, which ascended to a certain distance with a jerky, butterfly motion, then drifted aimlessly into the bushes like so many dead leaves.

175. **Wilsonia pusilla.** WILSON'S WARBLER.—Rare. Captain Thorne records: "One male May 19, 1889." I have not seen it.

176. **Setophaga ruticilla.** AMERICAN REDSTART.—Tolerably common summer visitor. Rare, or casual, in the pines. Undoubtedly breeds, although I have not happened to find a nest. A pair remained during the summer of 1907 on Mr. J. H. Price's ranch but search for the nest was made too late. Captain Thorne has taken young birds by July 24. On May 25, 1893, a female Redstart made persistent efforts to reach the flies inside my window through the glass at my ranch near Terry. The males appear to arrive before the females.

177. **Anthus pensylvanicus.** AMERICAN PIPIT.—Not common. Occasional spring and fall migrant in small flocks. Pipits are most often seen here about the end of April in the ploughed land, as they are fond of following the plough and seeking their food in the freshly turned up earth. They also alight on the wire fences. On the prairie in fall, Pipits associate with Horned Larks and Longspurs, when they can always be recognized by their buff underparts.

178. **Cinclus mexicanus.** AMERICAN DIPPER.—Rare. Mr. J. H. Price has observed this bird at different dates on Locate Creek in summer. I have no notes of the Dipper in Montana, although I have observed it on Tongue River, just across the line in Wyoming, where it breeds.

179. **Oroscoptes montanus.** SAGE THRASHER.—Rare. In his report to the Secretary of War on the Montana collections made in 1873, Dr. J. A. Allen mentions Sage Thrashers as seen at distant intervals on the divide between the Musselshell and Yellowstone.<sup>1</sup>

<sup>1</sup> Notes on the Natural History of portions of Montana and Dakota. By J. A. Allen, Naturalist of the Expedition.

In his list of Birds of Fort Custer<sup>1</sup> Dr. Mearns gives the Sage Thrasher as "Common." Captain Thorne saw two on Tongue River in August, 1890, and secured one. Neither I nor any of my correspondents have met with this bird.

180. *Galeoscoptes carolinensis*. CATBIRD.—Common summer visitor along the rivers and creeks. Rare or casual in the pines. More nests of this species were to be found on my ranch near Terry than of any other bird.

181. *Toxostoma rufum*. BROWN THRASHER.—Common along the rivers of both counties; scarce in the pines. Dr. J. A. Allen found the Thrasher "more or less common everywhere in the thickets along the streams from the Missouri to the Musselshell."

This splendid songster arrives about the first week of May and begins to sing in the middle of the month. As far as my observations go the Thrasher is silent while the female is incubating, and, as she is usually sitting hard in the second week of June, the song can be heard only for a period of about three weeks. Thrashers nest in the wild plum and choke cherry thickets here, or in the willows along the banks of the Yellowstone. They bred regularly on my ranch in Custer County, and in June, 1894, there was a nest in the bushes at my north window. Four eggs are laid.

The Thrasher is the only singer in Eastern Montana which can vie with the Old World Thrush or Blackbird — even with Philomela herself, but for a harsh note produced after the most beautiful passages. Like the Nightingale, the Thrasher sings at night, when other birds are silent, as well as by day, although several species do so occasionally — notably the Meadowlark. As may be inferred from the above, the Thrasher has a powerful and melodious voice, which is equally entrancing when heard from the topmost branches of a pine or from the lowest depths of some tangled copse. Although considered as only an aberrant Thrush by ornithologists the Thrasher's song cannot fail to remind the pilgrim of the Song Thrush (*Turdus musicus*), which, according to Dixon, is the finest of British feathered musicians.<sup>2</sup> Comparisons are frequently made between the song of the Old World Thrush and that of the Nightingale and I have referred the point to my brother who has had considerable opportunities for hearing both. He says: "The Song Thrush is frequently heard in full song after sun-down, and in the stillness of night this song is frequently mistaken for that of the Nightingale by those who have heard both. Obviously, therefore, the two may be compared. On the other hand, if the two birds *be heard simultaneously*, no possible mistake can be made as to which is Thrush and which Nightingale, and, in my opinion, no comparison seems reasonable at such a moment. We yield at once to the magic spell of 'the thrilling song which has been the theme of poets of all ages.' When at Trinity College, Oxford, in the seventies, I had the good

<sup>1</sup> Condor, Vol. VI, 1904, p. 21

<sup>2</sup> See as quoted in 'British Birds' by Henry Seebohm, Vol. I, p. 216.

fortune to occupy rooms looking out upon the beautiful gardens, and happened frequently to be awake at dawn. In the summer term the birds which thronged in the gardens were heard to the greatest advantage shortly after sunrise, and I used to take pleasure in discriminating the various notes of the feathered instrumentalists in this bird symphony. As a rule, the orchestra was in full swing when the Nightingale entered the 'partition' and I can truthfully affirm that he dominated the melodious sea of bird-tone just as effectually as three trombones can and do dominate all the strings of Wagner's immense orchestra. I have no desire to imply that the Nightingale resembles the trombones except in the patent fact that once he 'chips in' upon the other birds — as many thrushes as you please — you've got to listen to him or shut your window."

182. **Salpinctes obsoletus.** ROCK WREN.—Summer visitor to both counties. Abundant in the badlands, and on ranches near them replaces the House Wren about buildings. Like the latter, the bird is exceedingly tame and confiding and so falls an easy victim to predatory animals. On August 23, 1906, I interfered to save a Rock Wren from the clutches of a Sparrow Hawk which stooped at it just below my window where I sat writing. Rock Wrens arrive about May 15, and begin nesting soon after. They excavate any small hole selected in a steep cut bank or butte, to a depth of six inches, in which a nest is made of dried grass or weeds which may grow near. One nest was constructed almost entirely of a brittle weed which grows in the badlands. Six, seven, or eight eggs are laid. July 3 is the earliest date on which I have seen full feathered young, but nestlings may be fledged any time between this and the beginning of August. At first their plumage is slate-colored above, showing traces of cinnamon, head brown, entire underparts buff, legs pink, but in about a month approximates to that of the parents. Both the latter feed the nestlings assiduously, chiefly on grasshoppers and green caterpillars. Owing to their habit of choosing holes under the overhanging edges of washouts, the nests of Rock Wrens are exposed to annihilation from the frequent land slides. I know of one nest, containing seven eggs, which was thus engulfed, when the sitting bird must have perished, and perhaps her mate as well.

183. **Thryothorus ludovicianus.** CAROLINA WREN.—Rare. Of this bird Captain Thorne writes: "Two in May on the divide between Powder and Tongue Rivers. One in May and two in August at Lame Deer, Montana." I have not seen it.

184. **Troglodytes aëdon aztecus.** WESTERN HOUSE WREN.—Common summer resident. Nests in all kinds of places, but usually in the holes of trees along the rivers and creeks. Replaced by the Rock Wren in rough pine hills or badlands. An occasional wanderer to my water-troughs in Dawson County. In June, 1893, at my ranch (Custer County) one pair of wrens nested in a hole in a box elder, while another pair occupied the shelf inside an outbuilding. In the latter case the birds made an immense barricade of sticks and the young were full fledged on July 31. On July 1,

1905, near Knowlton, a pair of Wrens were feeding their nestlings in the deep fissure of an uprooted pine which had fallen across a spring. A mass of twigs and bullberry thorns had been placed to protect the nest where the crack was widest. I have found the female wren utterly fearless; she would feed her young continually despite my presence.

185. *Sitta carolinensis aculeata*. SLENDER-BILLED NUTHATCH.—Not common. Dr. J. A. Allen mentions this bird as "observed at rare intervals, both on the Yellowstone and Musselshell." Captain Thorn "saw six and took two at Lame Deer, Montana." I have only seen these Nuthatches in the Missouri Brakes, and among the pines around Knowlton where they breed. On July 1, 1905, I observed two old birds with four young come to drink from the water-troughs at the old saw-mill on Horse Creek. They were in company with Crossbills and Goldfinches.

186. *Parus atricapillus septentrionalis*. LONG-TAILED CHICKADEE.—Common resident in both counties. Nests in small deep holes of high dead pines. On June 15, 1903, a pair of Chickadees were seen to be greatly excited over a strip of rag hung in a pine on Cottonwood Creek, Dawson County. They hovered about it, meditating an attack, but with each breath of wind the flag fluttered, and frightened away the birds which returned when the wind ceased. This strange behavior on their part induced me to investigate, when I found their nest of wool, hair, and grass in a very small hole below the rag. Four full feathered young were visible, and there may have been more in the background. The birds' fears were entirely allayed when I wrapped the offending rag around the branch. Chickadees are among the tamest birds here, and were welcome visitors to all my hunting camps.

187. *Myadestes townsendii*. TOWNSEND'S SOLITAIRE.—Winter resident; not common. Arrives second week in September and leaves middle of April. I first noticed these birds on Snow Creek, in the Missouri Brakes, when they were frequently seen among the pines during October and November. Another pair were observed on Oct. 8, 1899, in the pines of the divide above the badlands opposite Terry, on the north side of the Yellowstone. I have not seen Townsend's Solitaire on the south side of the river. A pair frequented my ranch in Dawson County during November, 1904, and throughout October and November in 1905. On Nov. 25, these were joined by two others when all four seemed to live near the water troughs and playfully chased each other round and round the cedars. They were not seen after a blizzard on Nov. 28, when the temperature fell to 14° below zero, but they are able to withstand severe cold, as a pair returned at the end of January and remained until April 14. During winter they subsist on cedar berries. On Sept. 9, 1906, a Townsend's Solitaire perched on a trough into which I was pumping water.

188. *Hylocichla alicie*. GRAY-CHEEKED THRUSH.—Rare. A solitary individual came to my water-troughs (Dawson County) on May 13, 1904. Captain Thorne records "one female, May, 1889."

189. *Hylocichla ustulata swainsoni*. OLIVE-BACKED THRUSH.—Not

common. A regular spring migrant in both counties but seldom seen in the fall. I have not seen more than two at one time, excepting on May 31, 1906, when I counted six together.

190. *Merula migratoria propinqua*. WESTERN ROBIN.—Common summer resident. Arrives about the second week in April. Several pairs nested annually on my ranch near Terry, and one or two pairs in the pine hills at my Dawson County ranch. In 1907, a pair of Robins nested in a shed at Mr. J. H. Price's ranch near Knowlton. The young were hatched on June 22, and were flying about on July 28. In May, when about ranches, the Robin chooses some elevated position, such as the brace of high gate posts, or the cable of a haycarrier, and pours forth its song for half an hour at a time. Although the latter only consists of two notes frequently repeated (*chirrup, chirrup, chirrup*, etc.), it is nevertheless a persistent and extremely pleasing effort. In the fall Robins, old and young, flock together in the pines. A species of red currant (called spicerry here) ripens about the end of August and proves a great attraction to them. These plants grew around my water-troughs (Dawson County); on August 27, 1904, I watched upwards of seventy Robins which were drinking and feeding on the berries. Six birds could be seen perched on a single bush. The Robins constantly uttered a loud clucking similar to the Old World Blackbird (*Turdus merula*) but I never heard them sing. They remain in the pines until about October 22, when all leave for the south.

191. *Sialia arctica*. MOUNTAIN BLUEBIRD.—Bluebirds are among the earliest spring arrivals here, and may be seen as early as March 20. They are not common in either county except on the spring and fall migrations, when they pass in flocks containing from twenty to thirty birds. A few pairs remain to nest in the pine hills, choosing any convenient cavity in a dead tree.

During June, 1903, a pair of Bluebirds took possession of a deserted Cliff Swallow's nest near the summit of a perpendicular sand rock at my ranch in Dawson County.

#### ADDENDA.

192. *Nyctala acadica*. SAW-WHET OWL.—Rare. To the best of my knowledge this owl has not before been recorded from Montana. On July 12, 1907, Mr. M. M. Archdale was driving a cattle herd on his ranch near Knowlton when he caught sight of this owl, which had been disturbed by the animals, at the edge of a thicket. Feeling certain that here was a new bird for this locality he most kindly sent his brother post-haste for me while keeping watch on the owl himself until I arrived. It proved to be a bird of the year, and was probably bred in the neighborhood. Other members of the family, from their nocturnal habit, might easily have escaped notice. I watched the owl for a long time. It evidently had a great dislike to the daylight, flitting about, when disturbed, in the depths of the plum and

choke cherry brush where my wife had followed it with a camera giving exposures up to twenty seconds. As soon as she desisted the owl immediately closed its eyes, although its short flights were made with swiftness and vigor.

It appeared to prefer perching at heights of three or four feet from the ground, and refused to stay in the tall box-elders of which there were several in the grove. A shrew-mouse on a branch near the owl had obviously been killed by it. As seen at a distance of eight feet this bird's appearance was as follows.

Upper parts uniform chocolate brown, wings and tail darker; facial disc black, in strong contrast to broad white circles above the eyes, the white including the forehead. Upper breast the color of back, becoming abruptly fulvous on the underparts and giving the impression that beneath the bird is half brown and half buff. Primaries spotted with white. Feet and legs pale buff, bill black, irides orange. Length about seven inches.

77. *Asio wilsonianus*. On May 7, 1907, when walking with Mr. Dan Bowman at his ranch near Knowlton, we saw a Long-eared Owl lying dead upon her six eggs in a deserted crow's nest. We concluded that she died from eating a poisoned bait.

79. *Megascops asio maxwelliae*. Four, two old, and two young which could scarcely fly, were seen by Bert Bowman at his father's saw-mill on Horse Creek, Custer County, in July, 1897. He again noticed four on the south fork of Sheep Creek, Custer County, in July, 1905.

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## SUMMER BIRDS OF THE GREEN MOUNTAIN REGION OF SOUTHERN VERMONT.<sup>1</sup>

BY FRANCIS H. ALLEN.

So little has been published concerning the distribution of birds in Vermont that I have thought my observations conducted in the breeding-season in the years 1886, 1895, and 1907 in the southern part of the State might be of some interest. These observations were confined to periods of about a fortnight each at a time when practically all birds were settled for the season, and they thus show, so far as they go, the breeding population. In 1886 I spent the time from July 5 to July 19 at Londonderry, in Windham County,

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<sup>1</sup> Read before the Nuttall Ornithological Club, Oct. 21, 1907.

and again in 1895 I visited the same place from June 17 to July 1. In 1907 I conducted my observations in the neighborhood of West Bridgewater, in Windsor County, from June 18 to June 29.

Londonderry is in Lat.  $43^{\circ} 13'$ , in the valley of the West River, about midway between the New Hampshire and New York lines. The altitude of the principal village, South Londonderry, is 1020 feet; that of the North Village, three miles farther up the river, is 1100 feet. The house where I spent my nights is on the brow of a hill on the east side of the town and is about 1450 feet above the sea. The country is smooth and comparatively fertile. The main Green Mountain range, on the west side of the valley, reaches its culmination for this region in Stratton Mountain (3859 feet), said to be the highest mountain in Vermont south of Killington Peak. On the east side, Glebe Mountain, or the Glebe, is the highest, with an altitude of 2944 feet. These mountains were in 1886 and 1895 — I am uninformed as to present conditions — almost entirely covered with forest, mostly well advanced second growth but with more or less of the original. They are graceful in shape, with flowing outlines, and present little of the rugged in appearance. The West River is a swift, shallow stream, of only moderate width, except above the milldams. There are considerable stretches of intervalle in places along its banks.

The woods of this region were mostly yellow birch, hemlock, red spruce, balsam fir, and sugar maple. White pines were only fairly common. The deciduous trees and mixed growth extended well up the mountainsides, even to the summit of the Glebe. The character of the country was sufficiently diversified to attract a respectable variety of birds.

West Bridgewater, the centre of my operations in 1907 (June 18-29), is a little hamlet situated in the narrow valley of the Ottaquechee River in the heart of the Green Mountains, in Lat.  $43^{\circ} 36'$  and nearly due north of Londonderry. It is at the extreme west of the township of Bridgewater and also of Windsor County, a considerable part of the village being in Sherburne, Rutland County, in fact. Three other towns corner near by,—Mendon, Shrewsbury, and Plymouth. The altitude of the river-bottom at this point is about 1100 feet, and the mountains rise steeply above it, covered entirely with forest except for a few hill farms on some of

their lower ridges. The brook from the reservoir pond in Plymouth enters the river near the post-office, and its valley forms with the river-valley a kind of Y. The intervals are too restricted to admit of extensive grass-fields, so that the birds of the open are not very numerous and of so common a bird as the Vesper Sparrow I found but a single individual. Woods birds, on the other hand, are abundant enough.

The western wall of the valley is formed by the main range of the Green Mountains. Killington Peak (4241 feet), the highest mountain in southern Vermont, is due west of the village, the summit at a distance of about three miles in an air line and about five miles by trail. Pico Peak (3967 feet) is a little farther north. Several other peaks in the neighborhood ascend beyond 3500 feet. On the other side of the Ottaquechee River is the long ridge of East Mountain, which rises to the height of 2812 feet.

In the valley and well up the mountainsides hardwood trees and mixed growth predominate, except in overgrown pastures, where young spruces and firs are the principal trees. On the upper slopes red spruce forms the bulk of the forest, and the summits of Killington and Pico Peaks are covered with a scrub growth of balsam fir, except that the very top of Killington is bare ledge. The deciduous woods are composed chiefly of sugar maple, yellow birch, beech, and paper birch. Scattered trees of red oak are not uncommon on the lower levels. Hemlock is common, but I saw no pine of any kind in the immediate neighborhood.

The Ottaquechee River is swift and shallow here for the most part, though there are several natural deadwaters in the town of Sherburne, one of which, at least, has marshy banks which harbor a few Swamp Sparrows as well as Red-winged Blackbirds and Savanna Sparrows.

The faunal relations of New England birds are so well understood that no general remarks as to the local distribution of the species are necessary here, and I proceed at once to the list. (It should be noted that this list cannot pretend to completeness even within its narrow limits. There are certainly omissions among the larger and more seclusive birds such as hawks and owls, but it probably gives a sufficient indication of the general character of the summer ornis of this region.)

LIST OF SUMMER BIRDS OBSERVED IN THE GREEN MOUNTAIN  
REGION OF SOUTHERN VERMONT.

Note.—L. is used for Londonderry, W. B. for West Bridgewater.

1. **Butorides virescens.** GREEN HERON.—Not uncommon in L. in 1886. Not seen there in 1895 nor at W. B.
2. **Philohela minor.** AMERICAN WOODCOCK.—One observed in Sherburne, June 21, 1907, at an altitude of 1800 or 1900 feet.
3. **Bartramia longicauda.** BARTRAMIAN SANDPIPER.—A pair observed in L., 1895. They evidently had a nest or young near by, to judge by their actions.
4. **Actitis macularia.** SPOTTED SANDPIPER.—One or two observed at L., 1895; none seen there, 1886. Quite common at W. B.
5. **Colinus virginianus.** BOB-WHITE.—One heard at L., June 30, 1895, all through the day, in fields and bushy pastures near the house where I stayed. This is probably about the northern limit of the natural distribution of this species in Vermont. I cannot, however, be positive that this was not an introduced bird, though I think it doubtful if any Quail have, or had at that time, been introduced in that neighborhood.
6. **Bonasa umbellus** *subsp.* RUFFED GROUSE.—Not uncommon. One old bird with young at W. B. was seen to be very gray and was doubtless of the subspecies *togata*, as are probably most or all of the birds in this region.
7. **Buteo borealis.** RED-TAILED HAWK.—Two observed at L., 1895; no hawks identified there in 1886. Three at W. B.
8. **Buteo platypterus.** BROAD-WINGED HAWK.—One observed several times at L., 1895.
9. **Falco peregrinus anatum.** DUCK HAWK.—One seen at W. B. flying up the brook-valley one afternoon. Mr. G. H. Ross in his 'List of Birds observed in Rutland County' (Vermont Bird Club, Bulletin No. 1, 1906, p. 9) says this species has bred at Wallingford, which is about fifteen miles southwest of W. B.
10. **Syrnium varium.** BARRED OWL.—One heard at L., 1895. I heard no owls at W. B., though I took a number of evening walks for the express purpose of listening for them. From what the inhabitants told me I concluded that the Barred, Great Horned, and Screech Owls were all found there.
11. **Coccyzus erythrophthalmus.** BLACK-BILLED CUCKOO.—Rather common.
12. **Ceryle alcyon.** BELTED KINGFISHER.—Rather common.
13. **Dryobates villosus.** HAIRY WOODPECKER.—Not uncommon.
14. **Dryobates pubescens medianus.** DOWNTY WOODPECKER.—Rather common.

[**Picoides arcticus.** ARCTIC THREE-TOED WOODPECKER.—Prof. G. H. Perkins in his 'Preliminary List of the Birds found in Vermont' (New York

and Albany, 1901) says that Mr. G. H. Ross of Rutland has found this species nesting in Sherburne; and Mr. Ross, in his 'List of Birds observed in Rutland County,' says, "One nesting record, Pico Peak, Sherburne."]

[*Picoides americanus*. AMERICAN THREE-TOED WOODPECKER.—Mr. R. H. Howe, Jr.'s, Review of Perkins's List (Contributions to N. A. Ornithology, II, 5-23, 1902) gives this bird as a summer resident on Pico Peak above 2500 feet on the authority of Mr. Ross. Mr. Ross, in his own List (*op. cit.*), merely says, "Have seen it in summer on Pico Peak." Probably neither of the Three-toed Woodpeckers is at all common in this region. In two ascents of Killington Peak and one of Pico I saw none.]

15. *Sphyrapicus varius*. YELLOW-BELLIED SAPSUCKER.—Pretty common; probably the commonest woodpecker of the region.

[*Ceophloeus pileatus abieticola*. NORTHERN PILEATED WOODPECKER.—I think I saw one of these birds at L. in 1895, and I found peck-holes of the species at W. B., though none that were very fresh. It should probably be classed as a rare resident in this region.]

16. *Colaptes auratus luteus*. NORTHERN FLICKER.—Rather common at L. Only two observed at W. B.

17. *Chordeiles virginianus*. NIGHTHAWK.—Rather common at L. None observed at W. B., though I found them common at Woodstock, a dozen miles to the east.

18. *Chaetura pelasgica*. CHIMNEY SWIFT.—Abundant.

19. *Trochilus columbris*. RUBY-THROATED HUMMINGBIRD.—Two at L., 1886; none there in 1895. Five at W. B.

20. *Tyrannus tyrannus*. KINGBIRD.—Rather common at L. Not very common at W. B.

21. *Myiarchus crinitus*. CRESTED FLYCATCHER.—Not very common at either locality. I found a pair at an altitude of about 2000 feet in the town of Sherburne, in a lumberman's clearing in the woods. I also observed two other individuals in different localities in the neighborhood of W. B.

22. *Sayornis phoebe*. PHOEBE.—Common.

23. *Nuttallornis borealis*. OLIVE-SIDED FLYCATCHER.—Rather common.

24. *Contopus virens*. WOOD PEWEE.—Common.

25. *Empidonax flaviventris*. YELLOW-BELLIED FLYCATCHER.—Not common. A few observed at L., 1895; none identified at W. B.

26. *Empidonax traillii alnorum*. ALDER FLYCATCHER.—Uncommon at L. Rather common at W. B.

27. *Empidonax minimus*. LEAST FLYCATCHER.—Rather common at L. Common at W. B.

28. *Cyanocitta cristata*. BLUE JAY.—Rather common.

29. *Corvus brachyrhynchos*. AMERICAN CROW.—Common at L.; less so at W. B.

30. *Dolichonyx oryzivorus*. BOBOLINK.—Common at L.; less so at W. B. on account of scarcity of good breeding-places.

31. *Agelaius phoeniceus*. RED-WINGED BLACKBIRD.—Rather common.

32. *Icterus galbula*. BALTIMORE ORIOLE.—Two observed in South Londonderry village, 1895. None found at W. B., though a few were noted at Woodstock on my way there.

33. *Carpodacus purpureus*. PURPLE FINCH.—Common.

34. *Loxia curvirostra minor*. AMERICAN CROSSBILL.—A flock of fifteen or twenty seen twice, and small detachments or individuals several times, at L., 1895.

35. *Astragalinus tristis*. AMERICAN GOLDFINCH.—Pretty common at L. Abundant at W. B.

36. *Spinus pinus*. PINE SISKIN.—Three seen at W. B.

37. *Poecetes gramineus*. VESPER SPARROW.—Common at L. Only one observed at W. B., where extensive upland grass-fields were few.

38. *Passerculus sandwichensis savanna*. SAVANNA SPARROW.—Common in both localities.

39. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—Common at higher levels. Found as low as 1800 feet at W. B. It came still lower at L., but I have no record of the precise altitude.

40. *Spizella socialis*. CHIPPING SPARROW.—Common.

41. *Spizella pusilla*. FIELD SPARROW.—Rather common at L. Only two observed at W. B.

42. *Junco hyemalis*. SLATE-COLORED JUNCO.—Common at higher levels. Found among spruces as low as 1200 feet at W. B. A few were also seen in the valley at L.

43. *Melospiza cinerea melodia*. SONG SPARROW.—Common.

44. *Melospiza georgiana*. SWAMP SPARROW.—Not very common, doubtless because suitable breeding-places are not numerous or extensive. One observed at L., 1886; three or four there, 1895; three males singing in Sherburne.

45. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBEAK.—Not uncommon at L., 1886; none observed there in 1895. Rather common at W. B.

46. *Cyanospiza cyanea*. INDIGO BUNTING.—Common at L. Rather common at W. B.

47. *Piranga erythromelas*. SCARLET TANAGER.—I found none at L. in 1886, but they were rather common there in 1895. At W. B. I found them not uncommon.

48. *Petrochelidon lunifrons*. CLIFF SWALLOW.—Common.

49. *Hirundo erythrogaster*. BARN SWALLOW.—Abundant.

50. *Riparia riparia*. BANK SWALLOW.—Not uncommon at L., 1886, but not identified there in 1895. Abundant at W. B.

51. *Ampelis cedrorum*. CEDAR WAXWING.—Common.

52. *Vireo olivaceus*. RED-EYED VIREO.—Abundant.

53. *Vireo gilvus*. WARBLING VIREO. Four heard in the village streets in L. in 1895.

54. *Vireo solitarius*. BLUE-HEADED VIREO.—Not very common.

55. *Mniotilla varia*. BLACK AND WHITE WARBLER.—Rather common at W. B. and in 1895 at L., but not observed at L. in 1886.

56. ***Helminthophila rubricapilla.*** NASHVILLE WARBLER.—I noted but a single individual at L. in 1886, but found the bird abundant there in 1895. Common at W. B. Perhaps this and the preceding species were commoner at L. in 1886 than indicated, and had merely suspended singing.

57. ***Compsothlypis americana usneæ.*** NORTHERN PARULA WARBLER.—Rather common.

58. ***Dendroica caeruleascens.*** BLACK-THROATED BLUE WARBLER.—Rather common at L. Common at W. B.

59. ***Dendroica coronata.*** MYRTLE WARBLER.—A few observed on the higher levels at L. Pretty common at W. B. A bird of the spruce growth.

60. ***Dendroica maculosa.*** MAGNOLIA WARBLER.—Abundant at L. and the commonest warbler there. Common at W. B. Haunts the sparse spruces and firs of overgrown pastures.

61. ***Dendroica pensylvanica.*** CHESTNUT-SIDED WARBLER.—Common at L. Abundant at W. B.

62. ***Dendroica striata.*** BLACK-POLL WARBLER.—One heard singing on summit of Stratton Mountain, June 29, 1895, at an altitude of about 3800 feet (Auk, XIII, 1896, 345). Abundant on and near summits of Killington and Pico Peaks and found down to about 3200 feet.

63. ***Dendroica blackburniae.*** BLACKBURNIAN WARBLER.—Common.

64. ***Dendroica virens.*** BLACK-THROATED GREEN WARBLER.—Rather common.

65. ***Seiurus aurocapillus.*** OVEN-BIRD.—Common at L. Rather common at W. B.

66. ***Geothlypis philadelphia.*** MOURNING WARBLER.—One heard singing June 28 and 30, 1895, at L. Four singing males found at W. B. One of the latter uttered a number of times in my hearing a call or alarm note which may be worth recording here as it is not described in Mr. Chapman's 'Warblers of North America.' It was a sharp, rough *chip*, difficult of description but quite distinct from any other bird-note with which I am familiar.

67. ***Geothlypis trichas brachidactyla.*** NORTHERN YELLOW-THROAT.—Common.

68. ***Wilsonia canadensis.*** CANADIAN WARBLER.—Not common at L.; two observed there in 1895. Abundant at W. B. I think I have never elsewhere found this species so abundant as in the neighborhood of West Bridgewater.

69. ***Setophaga ruticilla.*** AMERICAN REDSTART. Rather common at L. Common at W. B.

70. ***Galeoscoptes carolinensis.*** CATBIRD.—Not common at L. Rather common at W. B.

71. ***Toxostoma rufum.*** BROWN THRASHER.—Three or four observed at L. in 1895. None at W. B.

72. ***Troglodytes aëdon.*** HOUSE WREN.—Not common. I found none at L. in 1895 and none at W. B.

73. **Olbiorchilus hiemalis.** WINTER WREN.—Rather common at L. At W. B. I found it positively abundant on the higher levels and occasional as low as 1200 or 1300 feet.

74. **Certhia familiaris americana.** BROWN CREEPER.—Rather common on the higher levels.

75. **Sitta carolinensis.** WHITE-BREASTED NUTHATCH.—Not very common.

76. **Sitta canadensis.** RED-BREASTED NUTHATCH.—Rather common at L. Unexpectedly uncommon at W. B.; only three observed there.

77. **Parus atricapillus.** CHICKADEE.—Common.

78. **Parus hudsonicus.** HUDSONIAN CHICKADEE.—Two observed June 29, 1895, on summit of Stratton Mountain at an altitude of about 3800 feet (Auk, XIII, 1896, 345). I fully expected to find the bird on Killington Peak but on my two ascents of the mountain I was disappointed.

79. **Regulus satrapa.** GOLDEN-CROWNED KINGLET.—Rather common on the higher levels at L. Commoner at W. B.

80. **Hylocichla mustelina.** WOOD THRUSH.—I was surprised to find the Wood Thrush a fairly common bird in the neighborhood of West Bridgewater. I heard nine individuals, eight of which were singing. The ninth was heard calling near the top of the mountain on the eastern side of the Plymouth Pond brook, at an elevation of probably 2000 or 2500 feet. The others were at lower altitudes and chiefly at the foot of the mountains. Their songs could be heard from the road together with the songs of Wilson's, Olive-backed, and Hermit Thrushes. The first one I heard was on my way back from Killington Peak, where I had found the Bicknell's Thrushes in full song, so that I heard that day all five of our New England thrushes singing on their breeding-grounds,—an experience which I had enjoyed only once before, at Chocorua, N. H. I believe that the Wood Thrush is extending its range in northern New England, and it is not unlikely that it may now be found at Londonderry, but I am certain that as recently as 1895 it was absent or at any rate rare in that locality. It also breeds farther north in Vermont. Mr. A. H. Howell found it at the base of Mt. Mansfield in 1899 (Auk, XVIII, 1901, 345), and I found four or five individuals singing at Willoughby Lake in June, 1896. Mr. Bradford Torrey has also reported the bird from Lake Memphremagog, though from the Canadian side of the border ('Birds in the Bush,' Boston, 1885). The occurrence of the bird in the Province of Quebec, by the way, is not noted by Mr. Ridgway in 'The Birds of North and Middle America, Part IV.'

81. **Hylocichla fuscescens.** WILSON'S THRUSH.—Pretty common at L. Abundant at W. B. Confined to the lower levels.

82. **Hylocichla alicæ bicknelli.** Common on and near the summit of Killington Peak and descending to 3200 feet. Mr. R. H. Howe, Jr.,—on the authority of Mr. G. H. Ross, as he writes me,—gives it to Pico Peak as well as Killington. My failure to find it there on June 25 was very likely due to the fact that the birds were not active at the time, the day being a

very warm one and my stay on the summit of short duration. On my second ascent of Killington Peak on June 28 I heard only one or two singing, though a week earlier I had heard as many as eight. Mr. Howe says it "undoubtedly breeds on Mt. Annanance and other peaks over 3,000 feet." I am confident that it breeds on Annanance, for I saw there on June 30, 1896, a thrush with a loud squealing note which was unknown to me at the time but which I have since learned to be one of the Bicknell's notes. I think it very doubtful, however, if it is to be found on *all* peaks over 3000 feet, at least in the southern part of the State, though it may descend to that level on mountains of a greater altitude, spreading down from the scrub firs and spruces which are its normal habitat into the larger growth of the mountainsides.

83. *Hylocichla ustulata swainsoni*. OLIVE-BACKED THRUSH.—Rather common at L. Abundant at W. B. Commonest on the higher levels but descending well down the mountainsides.

84. *Hylocichla guttata pallasii*. HERMIT THRUSH.—Abundant in both localities, except that in 1895 this species had suffered decimation from the severe frosts of the preceding winter in the South, so that I found at L. that year but seven individuals singing (probably representing as many pairs).

85. *Merula migratoria*. AMERICAN ROBIN.—Abundant.

86. *Sialia sialis*. BLUEBIRD.—Common at L., 1886; absent in 1895, owing to the disastrous frosts of the preceding winter. Rather common at W. B.

The absence of the Bay-breasted Warbler (*Dendroica castanea*) from the foregoing list will perhaps be a matter of surprise to ornithologists who have found it comparatively common in the White Mountains of New Hampshire. I was constantly on the lookout for the bird at West Bridgewater, especially among the spruce growth of the higher altitudes, just below the Black-poll's haunts, where I confidently expected to find it, but though I am very familiar with its song and should certainly have noted it had the bird been present and singing, I was unsuccessful. Neither did I find the species at Willoughby Lake, Vt., where I spent the fortnight from June 17 to July 1, 1896. It is also absent from Mr. A. H. Howell's admirable list of the 'Summer Birds of Mount Mansfield, Vermont' (Auk, XVIII, 1901, 337-347). Professor Perkins calls it simply a migrant, and Mr. Howe (*op. cit.*) says, "Reported at Townshend summer, 1901, though not actually found breeding, Evans." It seems improbable therefore that the Bay-breasted Warbler can be anything like as common a breeder in the Green Mountains as it is in the White Mountains.

ON THE STATUS OF BREWSTER'S WARBLER (*HELMINTHOPHILA LEUCOBRONCHIALIS*).<sup>1</sup>

BY CHARLES W. TOWNSEND, M. D.

DR. LOUIS B. BISHOP, in a paper read at the twenty-second Congress of the American Ornithologists' Union, reached the conclusion by means of an admirable series of specimens, that while Lawrence's Warbler (*Helminthophila lawrencei*) is a hybrid between the Golden-winged Warbler (*H. chrysoptera*) and the Blue-winged Warbler (*H. pinus*), Brewster's Warbler (*H. leucobronchialis*), on the other hand "is merely a leucochroic phase of *H. pinus*."<sup>2</sup>

In observing the Brewster's Warbler in the Arnold Arboretum at Boston, reported by Miss Granger in these pages,<sup>3</sup> I was impressed by two things. In the first place the bird had the Golden-wing patches possessed by *chrysoptera* and not by *pinus*, and secondly the bird sang exactly like *chrysoptera* and not like *pinus*. These facts are certainly suggestive of a relationship between Brewster's Warbler and the Golden-winged Warbler.

Three specimens that have come under my observation are worth describing in this connection:

No. 1. A female warbler, No. 1258 in my collection, in worn plumage taken by me at Ipswich on July 17, 1907. At first sight the throat of this specimen appears to be white, but on closer scrutiny the throat, breast, and sides of the abdomen are seen to be slightly gray, and to contrast faintly with the white center of the abdomen and sides of the neck. The cheek patches are dark gray. On each wing are two narrow wing-bars, pale yellow in color. In the median line of the breast are three new, partly grown yellow feathers. This bird was feeding a young with a black throat, Col. C. W. T. No. 1259, a normal young male Golden-winged Warbler.

No. 2. A specimen kindly lent me by Mr. Wm. Brewster from

<sup>1</sup> Read at a Meeting of the Nuttall Ornithological Club at Cambridge, December 2, 1907.

<sup>2</sup> Auk, Vol. XXII, 1905, p. 24.

<sup>3</sup> Auk, Vol. XXIV, 1907, p. 343.

his collection, No. 48753, a female taken at West Point, N. Y., on May 26, 1901. This bird shows a clear white throat, a suspicion of a black line before and behind the eye, and faint grayish cheek patches. The wing patch is partially divided into two and yellow in color.

No. 3. A specimen kindly lent by Dr. J. A. Allen from the American Museum of Natural History, where I had noticed it in looking over the collection. This is a female, No. 54385, from Greenville County, South Carolina, with the plumage of a typical female Golden-winged Warbler, except that the left half of the throat is pure white. The right-half, the border line of which is clean cut and in the mid-line, is dark gray. The lower part of the throat on both sides is also gray, so that there is a right angle triangle in the throat that is white instead of dark gray. The cheek and wing patches are as in the normal female Golden-winged Warbler.

The first of these specimens might be dismissed as a much worn and faded female Golden-winged Warbler, except that the yellow breast feathers suggest Blue-winged blood, and the third as a case of partial albinism in an otherwise normal Golden-winged Warbler, but the second could not be so summarily disposed of. It is plainly a Brewster's Warbler, but the grayish ear patches are significant of Golden-winged blood. Taking all three specimens together it seems to me logical to conclude that we have here indications of links between the Golden-winged and Brewster's Warblers, a conclusion directly opposed to that of Dr. Bishop who found relationship between Brewster's and the Blue-winged Warblers only. If we had these specimens only, and pure white-throated Brewster's Warblers, we might conclude that the latter Warbler was merely a phase of the Golden-winged, but, as Bishop has shown, there are all degrees from a slight tinge of yellow on the breast of these otherwise white-throated specimens up to the complete yellow-throated Blue-winged Warbler.

Two explanations of the status of Brewster's Warbler would seem possible, both of which are worth discussion:

- (1) That Brewster's Warbler is a hybrid between the Golden-winged and the Blue-winged Warblers.
- (2) That Brewster's Warbler is a phase of the Golden-Winged

Warbler, between which and the Blue-winged Warbler there is a complete series of intergrades.

(1) Although it has been objected that it would be impossible to obtain a white-throated bird (*leucobronchialis*) from the interbreeding of a black-throated (*chrysoptera*) and a yellow-throated bird (*pinus*), yet I believe this is not the case, for in hybridization secondary or less dominant characteristics may become latent.

(2) The black throat of the Golden-winged Warbler is evidently a secondary or late development, at first confined to the male. The lesser development in the female, or its almost complete absence as in specimen No. 1 would point in this direction, as female birds are as a rule more ancestral or generalized in their type. Specimen No. 2, although still retaining the ear patches very faintly, shows a more complete reversion to the ancestral type, although the suspicion of a black ocular line may be taken to mean Blue-winged blood. An ocular line seems to be, however, a more primitive decoration than the broader cheek patch of the Golden-winged Warbler. Specimen No. 3 looked at from this point of view shows a slight tendency to reversion, as half of the throat has remained white.

In the Redstart (*Setophaga ruticilla*) the very striking jet black throat is attained by the male only, and that too not till the beginning of the second year. The female and the young male both have the simpler and more primitive light colored throat. If we could go back into the family history of this species, we should doubtless find an ancestor where the male, instead of sporting the brilliant flame and jet of the present bird, lived all his life a comparatively dull colored bird devoid of the black throat. It is conceivable, although it can not be proved, that even at the present day some male Redstarts live all their lives in the undeveloped or ancestral white-throated stage. To make the analogy with specimen No. 3 still closer, it has only to be pointed out that young male Redstarts sometimes show patches of the black on one side only, before they attain their full development. A yearling male Redstart in my collection (No. 638) taken at Stoneham, Mass., on May 30, 1884, has a black patch three quarters of an inch long and one eighth to one fourth inch wide, confined to the left side of the breast. On the right side a suspicion of black is shown

by one or two feathers only. This, therefore, is comparable to the condition in specimen No. 3 which shows black on one side only of the throat.

In the Golden-winged Warbler the early white-throated stage has, on this theory, been skipped in the normal bird, for the young have the dark throats of their parents. Brewster's Warbler with its white throat would then be an instance where the hypothetical ancestral stage has not been skipped. It is possible that some of these white-throated birds, if allowed to live, might ultimately develop black throats.

I wish here to express my indebtedness to Dr. Walter Faxon for assistance in the elaboration of this paper, and I would draw the following conclusions:

That Brewster's Warbler is *not* a leucochroic phase of the Blue-winged Warbler, but that it is either (1) a hybrid between the Golden-winged and the Blue-winged Warblers, or (2) that, in the white-throated form, it is a phase, ancestral in character, of the Golden-winged Warbler, and that there is a complete series of intergrades between this and the Blue-winged Warbler.

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## BIRD RECORDS FROM GREAT SLAVE LAKE REGION.

A PRELIMINARY LIST OF BIRDS OBSERVED BY MY 1907 EXPEDITION  
INTO THE ARCTIC BARREN-GROUNDS OF CANADA.<sup>1</sup>

BY ERNEST THOMPSON SETON.

COMMON LOON. *Gavia imber*. Common throughout the whole region from Fort Resolution to Back's River. Especially so on all the northern lakes. This and all the Loons stay until frost drives them out in October.

YELLOW-BILLED LOON. *Gavia adamsii*. Common and generally diffused from Fort Resolution to Alymer Lake. Its caterwauls and yodels are much like those of the Common Loon.

PACIFIC LOON. *Gavia pacifica*. Pacific or White-headed Loon. Common everywhere from Fort Resolution to Aylmer Lake, but most abundant on Great Slave Lake.

<sup>1</sup> For the identification of many species, chiefly the Gulls, I am indebted to Mr. E. A. Preble.

**RED-THROATED LOON.** *Gavia lumme.* Abundant everywhere from Fort Resolution to Aylmer Lake. It is the noisiest of the Loons and has many notes quite unlike those of its kin. One of its cries is like the harsh squawk of a 'devil-fiddle,' and when three or four of the birds are doing it in chorus it suggests a band of hyænas, or a pack of goblin hounds in chase of a goblin buck.

**PARASITIC JAEGER.** *Stercorarius parasiticus.* Found throughout the region and quite common on the larger lakes of the Barren-grounds. It is usually seen in pairs. It lives much like a hawk or a raven, coming when a caribou is killed, to share in the offal. Once saw one capture a Lapland Longspur on the wing, and have often seen it pursuing ground-squirrels. The flight of the species is comparable with that of the swiftest falcons.

**HERRING GULL.** *Larus argentatus.* Abundant from Fort Resolution to Back's River, feeding much as Ravens do, on carrion, fish, etc. Will pursue wounded game and often follows the hunter to share in the kill.

**CALIFORNIA GULL.** *Larus californicus.* Abundant on Great Slave Lake.

**SHORT-BILLED GULL.** *Larus brachyrhynchus.* Very abundant on Great Slave Lake. Not seen farther east.

**COMMON TERN.** *Sterna hirundo.* Common around Delta of Great Slave River and noted in small numbers from there to the eastern end of Great Slave Lake. Evidently breeding.

**ARCTIC TERN.** *Sterna paradisaea.* Common on Great Slave River and Lake and Clinton-Colden and Alymer Lakes. Last seen, Alymer Lake Aug. 24. Much more abundant than the Common Tern.

**DOUBLE-CRESTED CORMORANT.** *Phalacrocorax dilophus.* Not seen by me, but I was credibly assured that a large number breed every year at Isle à la Crosse, N. lat. 56°, W. Long. 108°.

**AMERICAN WHITE PELICAN.** *Pelecanus erythrorhynchos.* The north most colony is that on Great Slave River at Mountain Rapids, 150 miles south of Fort Resolution. Here, about 80 pairs breed each year; on June 22 the young were beginning to hatch.

**RED-BREASTED MEGANSER.** *Merganser serrator.* Abundant on Great Slave Lake and northeast to Clinton-Colden; evidently breeding.

**GREEN-WINGED TEAL.** *Nettion carolinensis.* Common about the Slave River and Delta.

**WHISTLER.** *Clangula clangula americana.* Abundant along the Great Slave River, down to the Delta, not seen east of that; observed there Sept. 25.

**LONG-TAILED DUCK.** *Harelda hyemalis.* Generally distributed on the lakes of the Barren-grounds where it breeds. It was very abundant on Great Slave Lake in mid-September near Fort Reliance, doubtless migrating at the time.

**WHITE-WINGED SCOTER.** *Oidemia deglandi.* Saw four on Artillery Lake Sept. 8.

**SURF SCOTER.** *Oidemia perspicillata.* Saw a pair on Slave River Delta July 16 and found it very abundant on Great Slave Lake in mid-September.

LESSER SNOW GOOSE. *Chen hyperborea*. Saw a flock at the narrows of Great Slave Lake Sept. 20.

GRAY WAVEY. *Anser albifrons gambeli*. Saw three at the west end of Lake Aylmer Aug. 15, and others on the north shore of the same lake on the two following days.

CANADA GOOSE. *Branta canadensis*. Appears generally distributed up to the limit of trees. Saw a pair with their brood near Kahdinouay Island, Great Slave Lake, July 19.

HUTCHINS GOOSE. *Branta canadensis hutchinsi*. This is known to be the form of the Barren-grounds proper, so a flock of 20 seen near the southern end of Artillery Lake Sept. 9 were probably of this race.

WHISTLING SWAN. *Olor columbianus*. Not seen until the autumn migration; then saw two or three hundred in small flocks of 3 to 12 on Sept. 22, 23, 24 and 25, around the mouth of Great Slave River.

BITTERN. *Botaurus lentiginosus*. Generally distributed in Great Slave River region and quite common in the Delta about Fort Resolution but not noted farther east.

LITTLE BROWN CRANE. *Grus canadensis*. Generally distributed along Great Slave River. Common about Fort Resolution. Observed once only east of that:—on Sept. 14 saw a flock of 6 flying easterly over Fort Reliance.

CAROLINA RAIL. *Porzana carolina*. This species was common in the region south and up to Fort Resolution, but not noted farther northward or eastward.

YELLOW RAIL. *Porzana noveboracensis*. The peculiar flint-and-steel notes of this furtive species were heard frequently in the marshy country 50 miles south of Fort Resolution, along Little Buffalo Run, but no farther.

NORTHERN PHALAROPE. *Phalaropus lobatus*. One seen near Sandhill Bay, Aylmer Lake, Aug. 20.

WILSON SNIPE. *Gallinago delicata*. Abundant in all the bogs along Great Slave River to the Delta. Not seen beyond.

BAIRD SANDPIPER. *Actodromas bairdi*. Noted on Casba River Aug. 8, and on Aylmer Lake Aug. 13.

SEMIPALMATED SANDPIPER. *Ereunetes pusillus*. During early August great flocks were seen on the Barrens but all disappeared by the middle of the month.

LESSER YELLOWLEGS. *Totanus flavipes*. A few seen on Casba River Aug. 8.

SPOTTED SANDPIPER. *Actitis macularia*. Abundant and breeding all along the Great Slave River and adjoining country, also sparingly from Fort Resolution, the whole length of Great Slave Lake to the edge of the woods. Saw it twice on the Barrens; at the east arm of Clinton-Colden Aug. 11, and on Aylmer Lake in mid-August.

SEMIPALMATED PLOVER. *Aegialitis semipalmata*. Saw a few breeding birds on Artillery Lake in early August, and an occasional one on Aylmer Lake about the middle of the month.

RUFFED GROUSE. *Bonasa umbellus togata*. Generally distributed in the woods up to Fort Resolution. Not seen or heard east of the Great Slave Delta.

WILLOW PTARMIGAN. *Lagopus lagopus*. Very abundant on the Barrens, where exclusively it breeds, migrating to the woods for the winter.

ROUGH-LEGGED HAWK. *Archibuteo lagopus sancti-johannis*. Generally distributed from Fort Resolution to Aylmer Lake; evidently breeding.

GOLDEN EAGLE. *Aquila chrysaëtos*. Noted throughout the region from Fort Resolution to Clinton-Colden Lake.

NORTHERN BALD EAGLE. *Haliaëetus leucocephalus alascanus*. Found throughout the country around Great Slave Lake, but less common than the Golden Eagle. On Sept. 23 I saw one pounce three times to catch a fish, but without success.

DUCK HAWK. *Falco peregrinus anatum*. Generally distributed; noted at Artillery Lake and at Aylmer; evidently nesting.

PIGEON HAWK. *Falco columbarius*. Observed at several places on Great Slave Lake in September, the most easterly being Fort Reliance, Sept. 14.

OSPREY. *Pandion haliaëtus carolinensis*. Saw one at the narrows of Great Slave Lake on Sept. 20.

GREAT GRAY OWL. *Scotiaplex nebulosa*. Saw only one during the summer. It was in the country south of Fort Resolution on July 11; evidently breeding.

ARCTIC HORNED OWL. *Bubo virginianus arcticus*. Abundant about Fort Resolution, and seen on the Great Slave River Delta; not observed farther north.

WHITE OWL. *Nyctea nyctea*. First seen on north side of Clinton-Colden Lake Aug. 11. But evidently it is of general distribution in the Barren-grounds.

HAWK OWL. *Surnia ulula caparoch*. Reported generally, but I saw only one; that was collected by E. A. Preble on Artillery Lake Sept. 3. It was at the Last Woods and had evidently come northward after nesting.

NORTHERN FLICKER. *Colaptes auratus luteus*. This was the only woodpecker seen east of Fort Resolution; it was abundant all along the route to the edge of the woods, that is, a point some 20 miles northeast of Fort Reliance. It went southward about mid-September.

PHOEBE. *Sayornis phœbe*. Found nesting all along the route to Fort Resolution and northeasterly as far at least as the narrows of Great Slave Lake on the north shore at W. Long. 111°.

HOYT SHORE LARK. *Otocoris alpestris hoyti*. Common everywhere on the Barrens north to Aylmer Lake; in full song Aug. 29.

CANADA JAY OR WISKAJON. *Perisoreus canadensis*. Abundant everywhere to the edge of the woods, but not seen on the Barrens.

RAVEN. *Corvus corax sinuatus*. Abundant everywhere. Once saw 28 together on the Barrens.

COWBIRD. *Molothrus ater*. Slave River Delta, July 16.

REDWING. *Agelaius phoeniceus arctolegus*. Slave River Delta, July 16.

RUSTY BLACKBIRD. *Euphagus carolinus*. Noted at several points along Great Slave Lake. At Kipling Lake, on Pike's Portage, 10 miles east of Fort Reliance, saw young of the year, now fully fledged, July 29.

PINE GROSBEAK. *Pinicola enucleator*. First seen on Et-then Island, Great Slave Lake, Sept. 21. Afterwards seen daily as we journeyed southward.

RED CROSSBILL. *Loxia curvirostra minor*. Saw one on Great Slave River Delta, Sept. 28.

LESSER REDPOLL. *Acanthis linaria*. Common on Pike's Portage, 10 miles east of Fort Reliance July 30, and thence northward to the edge of the woods. Evidently on its breeding ground.

SNOWBIRD. *Passerina nivalis*. First seen on the large central island of Clinton-Colden Lake, Aug. 11. Old ones with young of the year. After that, while we were going northward, others were seen, evidently on their breeding grounds, but it was not a common species.

LAPLAND LONGSPUR. *Calcarius lapponicus*. Beginning exactly at the edge of the woods and continuing as far as we went in the Barrens, were countless Lapland Longspurs. I think I did not see a dry ten-acres in the treeless region that was without at least two pairs of Longspurs. During the time we were there, Aug. 1 to Sept. 8, they were in flocks, at first of half-a-dozen, but finally of hundreds; in migration at Fort Reliance Sept. 14.

PAINTED LONGSPUR. *Calcarius ornatus*. One seen on the north shore of Aylmer Lake Aug. 13.

WESTERN SAVANNA SPARROW. *Passerculus sandwichensis alaudinus*. Observed along the whole route in the Barrens, but nowhere plentiful and not seen in flocks. Several appeared about Fort Reliance in mid-September.

HOODED SPARROW. *Zonotrichia querula*. First seen on Kahinouay Island, Great Slave Lake, as we went North, July 20; it was there nesting. After that they were abundant, nesting in every large thicket right to the edge of the Barrens. In the Last Woods Aug. 5, I found the nest, the first I believe known to science. It was on the ground under a dwarf birch, was made of grass and resembled the nest of the White-throated Sparrow. It contained three young nearly ready to fly. I found this species in full song Sept. 3.

GAMBEL SPARROW. *Zonotrichia gambeli*. Abundant on islands in Great Slave Lake in late July.

WHITE-THROATED SPARROW. *Zonotrichia albicollis*. Abundant at the mouth of the Great Slave River, but not seen farther northeasterly.

TREE SPARROW. *Spizella monticola*. First noted near the east end of Great Slave Lake; afterward abundant and nesting to the Barrens where there were small thickets. About the 1st of September the Tree Sparrows were gathered in small flocks to migrate and now were seen out on the Barrens many miles north of the summer range.

JUNCO. *Junco hyemalis*. Generally diffused, at least as far as the east end of Great Slave Lake.

LINCOLN FINCH. *Melospiza lincolni.* Nesting in the vicinity of Fort Resolution.

SWAMP SPARROW. *Melospiza georgiana.* Seen near Fort Resolution July 16.

FOX SPARROW. *Passerella iliaca.* Nests north to the edge of the woods, one noted at Last Woods on Artillery Lake Aug. 5. Also observed at Pike's Portage, east end of Great Slave Lake, Sept. 11.

CLIFF SWALLOW. *Petrochelidon lunifrons.* Abundant, nesting in great colonies in the cliffs of Great Slave and Artillery Lakes, but not seen farther.

BARN SWALLOW. *Hirundo erythrogaster.* Several were seen July 21, about the tall cliffs of Et-thèn which is a large island in the north side of Great Slave Lake, W. Long.  $112^{\circ} 20'$ . Doubtless they nest there.

WHITE-BREASTED SWALLOW. *Iridoprocne bicolor.* Common at Fort Resolution. Not seen farther northeast.

BANK SWALLOW. *Riparia riparia.* Found in thousands along the Great Slave River to Fort Resolution. Not seen farther northeasterly.

NORTHERN SHRIKE. *Lanius borealis.* Saw two at Fort Reliance Sept. 15.

RED-EYED VIREO. *Vireo olivaceus.* Common about Fort Resolution.

TENNESSEE WARBLER. *Helminthophila peregrina.* One seen near the eastern end of Great Slave Lake July 28.

YELLOW WARBLER. *Dendroica aestiva.* Fairly common, and nesting at Fort Resolution, and thence to the north shore of Great Slave Lake, at least as far east as W. Long.  $109^{\circ}$ .

BLACK-POLL WARBLER. *Dendroica striata.* Female observed feeding young at Artillery Lake, Aug. 5.

MYRTLE WARBLER. *Dendroica coronata.* On Sept. 3 a small flock appeared at Last Woods, Artillery Lake. This may be a northward fall migration.

WILSON BLACK-CAP. *Wilsonia pusilla.* Preble collected one at Last Woods, Artillery Lake, Sept. 5. Another north migrant in fall.

WESTERN WATER-THRUSH. *Seiurus noveboracensis notabilis.* Common about the Slave River Delta in mid-July.

PIPIT. *Anthus pensylvanicus.* First seen July 24 on north shore of Great Slave Lake about W. Long.  $110^{\circ}$ , probably nesting; thence northward to Clinton-Colden Lake. Very abundant in migration at Fort Reliance in mid-September.

LONG-TAILED CHICKADEE. *Parus atricapillus septentrionalis.* Abundant along Great Slave River to the Delta; not seen afterwards.

HUDSONIAN CHICKADEE. *Parus hudsonicus.* Abundant along Great Slave River and on the islands of Great Slave Lake to the north shore about W. Long.  $112^{\circ}$ . Not seen farther north or east.

GRAY-CHEEKED THRUSH. *Hylocichla alicia.* Abundant, and apparently nesting from Kahdinouay Island, middle of Great Slave Lake, to south end of Artillery Lake. Common at Fort Reliance on Sept. 14.

OLIVE-BACKED THRUSH. *Hylocichla ustulatus swainsonii*. Abundant along Great Slave River to near Fort Resolution, but not beyond.

HERMIT THRUSH. *Hylocichla aonalaschkae pallasi*. Common in dry woods along Great Slave River north to Kahdinouay Island in Great Slave Lake, not beyond.

ROBIN. *Merula migratoria*. Abundant and nesting throughout the wooded region traversed, as far as the edge of the woods. In the first week of September the species appeared in flocks on the edge of the Barrens.

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#### TWENTY-FIFTH STATED MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION.

THE Twenty-fifth Stated Meeting of the American Ornithologists' Union convened in Philadelphia, Pa., Monday evening, December 9, 1907. The business meeting was held in the Council Room, and the public sessions, commencing Tuesday, December 10, and lasting three days, were held in the lecture hall of the Academy of Natural Sciences.

BUSINESS SESSION.—The meeting was called to order by the President, Mr. Charles F. Batchelder. Twenty Fellows were present. The Secretary's report gave the membership of the Union at the opening of the present Stated Meeting as 850, constituted as follows: Fellows, 48; Honorary Fellows, 14; Corresponding Fellows, 61; Members, 72; Associates, 655.

During the year the Union lost eighty-one members, eleven by death, thirty-two by resignation, and thirty-eight for non-payment of dues. The deceased members include two Honorary Fellows, one Corresponding Fellow, one Member, and seven Associates, as follows: Prof. Alfred Newton,<sup>1</sup> an Honorary Fellow, who died in Cambridge, England, June 7, 1907, at the age of 78 years; Howard Saunders,<sup>2</sup> an Honorary Fellow, who died in London, Oct. 20, 1907, aged 72 years; Dr. Rudolph Blasius, a Corresponding Fellow, who died in Braunschweig, Germany, Sept. 21, 1907; Dr. William L. Ralph,<sup>3</sup> a Member, who died in Washington, D. C.,

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<sup>1</sup> For an obituary notice, see Auk, XXIV, pp. 365, 366.

<sup>2</sup> For an obituary notice, see Auk, XXV, pp. 103-104.

<sup>3</sup> For an obituary notice, see Ibid., XXIV, pp. 461, 462.

July 8, 1907, in the 57th year of his age; and the following Associates: August Koch,<sup>1</sup> who died at Mohawk, Florida, Feb. 15, 1907, aged 70 years; Mrs. Jacob L. Sweiger,<sup>2</sup> who died in Waterbury, Conn., March 24, 1907, in the 47th year of her age; Walter R. Davis, who died in Newton, Mass.; Mrs. Isabel Paddock Carter,<sup>3</sup> who died Sept. 15, 1907, at St. Johnsbury, Vt., aged 36 years; Frank T. Antes, who died Feb. 16, 1907; Charles F. Brennan, who died Mch. 21, 1907, and Alexander Maitland, who died at Princeton, N. J., Oct. 25, 1907.

The report of the Treasurer showed the finances of the Union to be in a satisfactory condition.

All of the officers were re-elected as follows: Charles F. Batchelder, President; E. W. Nelson and Frank M. Chapman, Vice-Presidents; John H. Sage, Secretary; Jonathan Dwight, Jr., Treasurer; Ruthven Deane, William Dutcher, A. K. Fisher, F. A. Lucas, Chas. W. Richmond, Thos. S. Roberts, and Witmer Stone, members of the Council.

Richard C. McGregor, of the Bureau of Science, Manila, Philippine Islands, was elected a Fellow; Dr. Carl R. Hennicke, of Gera, Reuss, Germany, and Dr. Sergius A. Buturlin, of Wesenberg, Estonia, Russia, were elected Corresponding Fellows; Ned Dearborn, of Chicago, Ills.; E. Howard Eaton, of Rochester, N. Y.; William L. Finley, of Portland, Oregon, and Ora Willis Knight, of Bangor, Maine, were elected to the class of Members, and the following one hundred and twenty-three persons were elected Associates, namely:

Rudolph M. Anderson, Macon, Mo.; Lyle S. Baer, Streator, Ills.; Frank C. Baker, Chicago, Ills.; Blenn R. Bales, M. D., Circleville, Ohio; Miss Anna K. Barry, Dorchester, Mass.; Frederick MacD. Barton, Concord, Mass.; Hermann Behr, Jennings, Md.; Otto Behr, Lopez, Pa.; John J. Beice, Oakville, Calif.; Isaac Bildersee, New York City; John J. Bishop, Springfield, Mass.; Maurice C. Blake, Hanover, N. H.; C. L. Bobb, Madison, Wis.; John I. D. Bristol, New York City; Winthrop S. Brooks, Milton, Mass.; Freeman F. Burr, East Haven, Conn.; Philip L. Buttrick, New Haven, Conn.; George I. Carpenter, Brooklyn, N. Y.; John D. Carter, Lansdowne, Pa.; M. A. Carriker, Jr., Nebraska City, Neb.; Mrs. Arthur P. Chadbourne, Boston, Mass.; W. Lee Chambers, Santa Monica,

<sup>1</sup> For an obituary notice, see Auk, XXIV, pp. 238, 239.

<sup>2</sup> For an obituary notice, see Auk, XXV, p. 105.

<sup>3</sup> For an obituary notice, see Auk, XXV, pp. 104-105.

Calif.; Ralph W. Chaney, Chicago, Ills.; B. Preston Clark, Boston, Mass.; Chas. E. Clark, Arlington, Mass.; Howard H. Cleaves, Princes Bay, Staten Is., N. Y.; Edward J. Court, Washington, D. C.; H. C. Curl, Washington, D. C.; David W. Dennis, Richmond, Ind.; Thomas W. Dewing, New York City; Donald R. Dickey, Dubuque, Iowa; Geo. E. Dimock, Jr., Elizabeth, N. J.; Dr. Frederick W. D'Evelyn, Alameda, Calif.; Stanley W. E. Edwards, Hartford, Conn.; Samuel P. Fay, Boston, Mass.; Jesse D. Figgins, New York City; Walter Fisher, Chicago, Ills.; Edwin S. Ford, Morristown, N. J.; Miss Hannah Fox, Philadelphia, Pa.; Dwight Franklin, New York City; Clarence T. Fuller, Brooklyn, N. Y.; R. T. Fuller, Lacona, N. Y.; Burton N. Gates, Worcester, Mass.; M. French Gilman, Shiprock, N. M.; Chapman Grant, Williamstown, Mass.; Alfred O. Gross, Urbana, Ills.; Francis Harper, College Point, N. Y.; Miss Pauline Hayes, Centralia, Ills.; Ralph H. Holman, Malden, Mass.; Ernest G. Holt, Montgomery, Ala.; Albert W. Honywill, Jr., New Haven, Conn.; Benjamin F. Howell, Jr., Boonton, N. J.; William H. Hoyt, Stamford, Conn.; Dr. L. L. Hubbard, Houghton, Mich.; Rev. H. W. Kellogg, Wilmington, Del.; Edwin C. Kent, Tuxedo Park, N. Y.; Raymond Kester, Philadelphia, Pa.; Axel J. de Lagerberg, Passaic, N. J.; Herbert Lang, New York City; J. Eugene Law, Hollywood, Calif.; John B. Lawrence, New York City; Carl C. Lawson, Chicago, Ills.; Walter H. Leibelsperger, Fleetwood, Pa.; Harry J. Lelande, Los Angeles, Calif.; William B. Long, Brookline, Mass.; Paul Loveland, Minneapolis, Minn.; Ethelbert I. Low, New York City; Henry H. Lowell, Newton Centre, Mass.; Richard M. Marble, Brookline, Mass.; Edward J. F. Marx, Easton, Pa.; Rev. E. Mead, Passaic, N. J.; Chas. M. Metz, Sheridan, Wyo.; Richard F. Miller, Philadelphia, Pa.; Miss Margaret Morse, Worcester, Mass.; Dr. Fred Mutchler, Worcester, Mass.; Nathaniel C. Nash, Jr., Cambridge, Mass.; Edward A. Nehling, Passaic, N. J.; J. Hosey Osborn, Passaic, N. J.; Clifford H. Pangburn, New Haven, Conn.; Theed Pearse, Crozet, Va.; L. S. Pearson, Wayne, Pa.; Max Minor Peet, Ann Arbor, Mich.; Philip B. Philipp, New York City; Francis W. Rawle, Rosemont, Pa.; Alfred C. Redfield, Wayne, Pa.; Chas. Richardson, Jr., Pasadena, Cali.; Fitzhugh Salley, Holly Hill, S. C.; Joseph A. Santens, Pittsburgh, Pa.; A. F. Satterthwait, Harrisburg, Pa.; Aretas A. Saunders, New Haven, Conn.; Orpheus M. Schantz, Morton Park, Ills.; Samuel Scoville, Jr., Philadelphia, Pa.; Robert P. Sharples, West Chester, Pa.; Althea R. Sherman, National, Iowa; George Shiras, 3rd., Washington, D. C.; Jesse L. Smith, Highland Park, Ills.; N. A. C. Smith, Worcester, Mass.; Edgar C. Stiles, West Haven, Conn.; J. Fletcher Street, Beverly, N. J.; Carlton B. Swift, Southborough, Mass.; F. L. van Tassell, Passaic, N. J.; Alex. R. Taylor, Columbia, S. C.; Lewis McI. Terrill, Westmount, Quebec; Almerin D. Tinker, Ann Arbor, Mich.; Gilbert Trafton, Passaic, N. J.; J. H. Trumbull, Plainville, Conn.; Dr. Henry Tucker, Philadelphia, Pa.; Mrs. Wm. H. Upham, Marshfield, Wis.; Miss Edith Van Deusen, Rutherford, N. J.; Justus Von Lengerke, New York City; Dr. Albert H. Wallace, Upper Montclair, N. J.; James S. Wallace, Toronto, Canada; Galen Watson, North Scituate, Mass.; J. A. Weber, New York City; Francis M. Weston, Jr., Mount Pleasant, S. C.; Cornelius Weygandt,

Philadelphia, Pa.; William P. Wharton, Groton, Mass.; Chas. E. Wisner, Detroit, Mich.; Miss Harriet H. Wright, Saginaw, W. S., Mich.; Howard W. Wright, Pasadena, Calif.; Luther E. Wyman, Chicago, Ills.; John A. Young, New York City; Mrs. William A. Young, West Newton, Mass.

Drs. Allen, Dwight, Merriam and Richmond, and Messrs. Brewster, Ridgway and Stone were reappointed 'Committee on Classification and Nomenclature of North American Birds.'

Drs. A. K. Fisher, E. A. Mearns and Thos. S. Roberts, and Messrs. Chapman and Nelson were appointed 'Committee on Bird Protection.'

The amendment to the By-Laws, proposed at the last Stated Meeting of the Union, was adopted, as follows:

Life membership, exempting the holder from all further fees or assessments, may be obtained by a Fellow on payment of one hundred dollars, by a Member on payment of seventy-five dollars, or by an Associate on payment of fifty dollars. But any Member or Associate, in event of his election to a higher class of membership, must then pay such additional sum as will make his total payments for life membership equal to the amount required for the class to which he is elected. In default of such payment his life membership lapses; but in that event there shall be credited toward his future annual assessments, any excess there may be in the amount he has already paid for life membership over that which he otherwise would have paid as annual assessments during the time he has held life membership.

A vote of thanks was unanimously tendered Dr. Jonathan Dwight, Jr., by the Council of the Union, in recognition of the vast amount of time and labor expended by him in compiling and editing the 'Index' (just published) to the 'Bulletin of the Nuttall Ornithological Club' and 'The Auk,' covering the period of twenty-five years, 1876-1900, and for the great care and thoroughness with which the work was done.

**PUBLIC SESSIONS. First Day.**—The meeting was called to order by the President, Mr. Batchelder. An address of welcome was made by Dr. Dixon, on behalf of the Academy of Natural Sciences.

The papers read during the morning session were as follows:  
'Preliminary Report of an Investigation of the Cause of Moult

and the Seasonal Change of Color in Birds,' by C. William Beebe. Remarks followed by Dr. Merriam, the author, and Mr. Stone.

'The Faunal Status of the Finger-Lake Country in New York,' by E. Howard Eaton. Remarks followed by Dr. Merriam, the author, and Mr. Stone.

'Pennant's Indian Zoology, 1769 Edition,' by Dr. J. A. Allen.

'Some Ornithological Doings of the Years 1850-1855,' by Witmer Stone.

'Bird Population and its Modifying Influences,' by Prof. Joseph Grinnell. In the absence of the author it was read, and remarked upon, by Dr. Merriam.

The papers of the afternoon, all illustrated by lantern slides, were:

'Breeding Birds of Carroll Islet, Washington,' by Prof. Lynds Jones.

'Report on Field Work for the American Museum of Natural History, in the South Atlantic States and the Bahamas, in April and May, 1907,' by Frank M. Chapman.

'The Expression of Emotion in Birds as Shown by Photography,' by Clinton G. Abbott.

In the evening the members of the Union, and their friends, met at dinner in the Banquet Hall of Boothby's Café. The after dinner speeches had reference, mainly, to the organization, growth, and present high standing of the Union, this being its twenty-fifth annual meeting.

*Second Day.*—The meeting was called to order by President Batchelder. The papers of the morning session were:

'Notes on Several Birds Living in the New York Zoölogical Park, and on an Apparatus for Making More Vivid the Evolution of any Group of Birds,' by C. William Beebe.

'New Bird Records from Great Slave Lake,' by Ernest Thompson Seton.

'The Ornithological Background,' by Dr. Spencer Trotter.

'The Value of Colors and Color-patterns as a Generic Character in Ornithology,' by Witmer Stone. Remarks followed by Mr. Beebe, the author, and Dr. Allen.

'Notes on Woodpeckers and their Plumage,' by W. E. Clyde Todd. Remarks followed by Mr. Fuertes.

'Notes on Some Porto Rican Birds,' by B. S. Bowdish.

The following papers, all illustrated with lantern slides, were presented at the afternoon session:

'The Psychologic Development of Young Hawks,' by E. Howard Eaton. Remarks followed by Mr. Seton.

'Report on Field Work for the American Museum of Natural History, in Saskatchewan and Alberta, in June and July, 1907,' by Frank M. Chapman. Remarks followed by Messrs. Seton and Fleming, and Dr. Bishop.

'The Wild Life of Home Birds,' by Rev. Herbert K. Job.

In the evening the visiting members of the Union were invited to a Smoker at the Academy, tendered by members of the Ornithological Section. It was conceded by all present to have been a most enjoyable gathering. •

*Third Day.*—The meeting was called to order by President Batchelder. The papers of the session were:

'The Geographical Distribution of the Juncos (or Snowbirds), and the Probable Significance of their Color Variations,' by Dr. Jonathan Dwight, Jr. Remarks followed by Rev. H. K. Job, the author, and Dr. Trotter.

'Some Additions to the Birds of Delaware,' by Chas. J. Pennock.

'The Generic Names *Mycteria* and *Tantalus*,' by Dr. J. A. Allen.

'Status of the Henslow's Sparrow in Connecticut,' by Geo. P. Ells. Remarks followed by Dr. Bishop, Mr. Woodruff, and the author.

'International Bird Protection in Europe,' by Henry Oldys. In the absence of the author it was read by Mr. W. H. Osgood.

Resolutions were adopted thanking the Academy of Natural Sciences for the use of a hall for a place of meeting for the Union, and for other courtesies extended; to the Local Committee and other Philadelphia ornithologists for the cordial welcome and most generous hospitality shown visiting members and friends of the Union, and to the Zoölogical Society of Philadelphia for its kind invitation to visit the Gardens of the Society.

After the adoption of the resolutions, Dr. A. K. Fisher spoke to add a further expression of the enthusiasm felt by the visiting members in regard to the exceptionally interesting and enjoyable character of the sessions just closing.

On Friday, December 13, after adjournment of the Union, Messrs. Stewardson Brown and George Spencer Morris conducted a party to the historic Bartram's Garden so intimately associated with the life of Alexander Wilson, and on the 14th a "pilgrimage" was made to Mill Grove, on the Perkiomen, the former home of Audubon.

The next meeting of the Union will be held in Cambridge, Mass., commencing November 16, 1908.

The attendance of members at the twenty-fifth anniversary of the founding of the Union was much larger than at any previous Stated Meeting — the Pacific Coast and Canada being well represented.

JNO. H. SAGE,  
*Secretary.*

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#### GENERAL NOTES.

**The Canvasback at Bridgewater, Mass.** — For many years until the 19th of October, 1907, there is no record of the Canvasback (*Aythya valisneria*) at Nippenickett Pond, Bridgewater, Mass. Upon the above date Elbert L. Hall and Irving Hall shot six birds of this species from a flock of thirteen. All the captured ones, and as nearly as could be learned all those escaping, were in either the female or immature male plumage.— ARTHUR C. DYKE, *Bridgewater, Mass.*

**Capture of a Tagged Canvasback Duck.** — On October 25 there was killed in Manahawkin Bay, New Jersey, a hen Canvasback Duck with an aluminum band on its leg containing the initials and number "T. J. O. D. 48." It would be interesting to know who banded this duck and for what purpose.— HENRY OLDYS, *Acting in Charge of Game Protection, Bureau of Biological Survey, Washington, D. C.*

**An American White-fronted Goose and Wilson's Phalarope in Essex County, Massachusetts.** — At Great Neck, Ipswich, Mass., early in August, 1907, an American White-fronted Goose (*Anser albifrons gambeli*), in a wounded condition, was caught by Mr. A. B. Clark, and confined in his yard. I saw the bird on August 25. It was an adult in full plumage, and appeared to have been wounded in one wing and in the leg on the same side.

This is the first definite record for Essex County, although in the early days this goose is believed to have been a not uncommon migrant. Howe and Allen in their 'Birds of Massachusetts' give only two definite records for the State. One of these was shot in Quincy about 1849, the other at Plymouth on November 26, 1897.

On August 18, 1907, a young female Wilson's Phalarope (*Steganopus tricolor*) was shot at Salisbury, Mass., and sent to Faneuil Hall Market, Boston. Here it was identified by Mr. John H. Hardy, Jr., and kindly given by him to the writer, in whose collection it now rests. This is the second instance of the capture of this western Phalarope in Essex County, and the fourth for the State. One of these was taken near Boston about 1833; one was taken in Essex County, at Nahant, on May 20, 1874, and one was taken at Nantucket on August 31, 1889.—CHARLES W. TOWNSEND, M. D., *Boston, Mass.*

**Rallus virginianus a Delaware Valley Breeder.**—In my numerous explorations of the Pensauken Creek marshes during the past four years I failed to find this bird until June, 1907. It was on the morning of the 15th that Mr. B. W. Griffiths and I were standing in front of our woodland cabin looking out over the marsh when a Virginia Rail came to the edge of the ditch which divides the marsh here and is used to get our boats from the house to the creek. The bird crossed the ditch and disappeared among the vegetation whence it uttered a number of clucking notes and, to our surprise, there appeared at the ditch's edge four black, downy young rails. One after another they took to the water in the ditch and swam across disappearing among the spatter-docks and water-arum. This was on the Camden County side of Pensauken Creek, N. J., and about seven miles from the Philadelphia City Hall.—CHRESWELL J. HUNT, *Philadelphia, Pa.*

**The Florida Gallinule, Stilt and Buff-breasted Sandpipers near Portland, Me., in 1907.**—On October 15, a female Florida Gallinule (*Gallinula galeata*) was shot at Atlantic House Pond, Scarborough, Maine. It passed into my collection. Its gullet contained three specimens of *Planorbis campanulatus*, and its stomach another. In the gizzard were a number of seeds. I am not aware of the previous capture of the bird at Scarborough, though two are recorded from Falmouth in 1894 (*cf.* Brock, *Auk*, XIII, p. 255).

The only Stilt Sandpiper (*Micropalama himantopus*) that I have heard of in this vicinity this fall was taken near Pine Point, Scarborough, a day or two previous to September 26. It passed into the collection of Bowdoin College.

On September 5, a beautiful male Buff-breasted Sandpiper (*Tryngites subruficollis*) was taken in Scarborough, near Pine Point. It is now in my collection. Mr. Blanchard Pillsbury who brought it to my attention,

informs me that it is the only specimen that has come to his notice for at least three years.—ARTHUR H. NORTON, *Portland, Me.*

**The Ruff at Seabrook, N. H.**—On September 24, 1907, I received a specimen of a European Ruff (*Pavoncella pugnax*) shot at Seabrook, N. H. The bird was a young female and the man who sent it to me said it was in company with a flock of ten or twelve Beetle-head Plover.

I would like to add—as some one not very long ago stated in 'The Auk' that he considered the Stilt Sandpiper extremely rare in Massachusetts—that I have within two years received 18 or 20 birds of this species in one day from near Newburyport, Mass.—JOHN H. HARDY, JR., *Arlington, Mass.*

**Capture of the White-winged Dove in the State of Washington.**—It gives me pleasure to record the capture of an adult female White-winged Dove (*Melopelia leucoptera*), which I collected Nov. 7, 1907, in the Puyalup River Valley. It forms the first record for this species for the State of Washington. It was alone and rather wild, necessitating a long wing shot to secure it. The feet and feathers being in perfect condition excludes any possibility of its being a cage-bird, even if such a thing were likely in this part of the country.—J. H. BOWLES, *Tacoma, Wash.*

**Capture of the American Goshawk and Harris's Sparrow near Chicago, Ill.**—A fine specimen of the American Goshawk (*Accipiter atricapillus*) was shot by L. E. Wyman, in the woods at River Forest on the Desplaines River, near Chicago, October 19, 1907. The bird, a female, was in magnificent plumage and of unusual size, measuring 25 inches in length with a spread of 46½ inches. The stomach was entirely empty, but a feast was in sight in the shape of a large white hen, which it lifted several feet from the ground; the second time both settled to earth after a shot from a small 44-gauge collecting gun, the hen escaping under the fence to the barnyard near by.

Nelson reported them very rare in 1876, and the only records for this section of Illinois are that of Woodruff, who shot a male March 30, 1889, and the two instances mentioned in Mr. Ruthven Deane's article on the American Goshawk, in 'The Auk,' for April, 1907.

I might mention another rare bird taken by Mr. Wyman October 13, 1907, at Beach, Lake Co., Ill., a male Harris Sparrow (*Zonotrichia querula*). It flushed from the ground to a small pine in company with a lot of Juncos (*Junco hyemalis*). Nelson reported this sparrow rare in 1876, and since then the specimen obtained by J. O. Dunn in 1895, and one seen in Lincoln Park by Ruthven Deane May 11, 1904, seem to be the only other records.—FRANK S. DAGGETT, *Chicago, Ill.*

**A Large Migration of Hawks.**—The guests at Lake Minnewaska, N. Y., had an opportunity in September to see the migration of large numbers of

hawks, presumably the Broad-winged. I enclose a letter from Mr. Kirk Munroe, the author, stating what he saw, and give you my own statement of what I saw myself, my estimates being, in all cases, moderate, and the numbers in some cases being from actual count. The birds were in most cases circling, in some cases sailing straight forward, a beat of the wings being extremely rare. As, in clear weather, the birds were very high, and in bad weather the light was very poor, I will not insist too strenuously upon my identification of the hawks as the Broad-winged, but I am substantially certain. The flocks were moving, in the main, from northeast to southwest, but parts of some of the flocks turned off to the west.

The flocks were accompanied, or followed, occasionally, by Red-shouldered Hawks; once or twice, apparently, by Fish Hawks; twice by Marsh Hawks, and once by an Eagle.

The flocks seen by me, then, numbered as follows:— Sept. 15, 30; Sept. 16, 15; Sept. 17, 11 and 30; Sept. 20, 35, 35, 50, 66, 10, 23, 50, 15, 40; Sept. 21, 30.

Those seen by Mr. Munroe, as will be noticed, were seen mostly on a day when I saw none, thus making the grand total very large. It may be that what we saw was not unusual, and therefore not worthy of special notice; but if it was at all out of the common, your readers will, no doubt, like to hear of it.— ROBT. BARBOUR, *Montclair, N. J.*

[Mr. Munroe's letter to Mr. Barbour, referred to above, is as follows:]

DEAR MR. BARBOUR:—A few days since: or to be more explicit, on the 18th inst., while on a walking trip to the Ice Caves of the Shawangunk Mountains near Ellenville, N. Y., in company with three Columbia College boys, I witnessed a most astonishing migratory flight of Broadwinged(?) Hawks concerning which I should like some further information.

When our attention was attracted to the birds we had come out from the caves and were eating our lunch on the summit of a rocky ridge from which we had an uninterrupted view of the sky as well as of a vast extent of territory on either side. The forerunners of the migration were a few stragglers that only caused comment by their undeviating and unhesitating southward flight. These leaders were, however, quickly followed by other birds in ever increasing numbers until the marvellous flight extended as far as the eye could reach to the eastward; and upwards to a point where the great birds appeared no larger than so many sparrows.

When the hawks first aroused curiosity by their numbers, one of my companions undertook to count them; but having counted fifty in less than one minute, he gave over the attempt, and was glad to have done so when, at the end of an hour the incredible flight still continued without pause or diminution.

I cannot venture even to guess how many hawks passed above us during that time; but know that they numbered well up among the thousands, and I write to ask if ever before you heard of a hawk migration on so vast a scale?

I would add that three days after encountering this remarkable flight, I witnessed another of the same character, only this time numbering but two or three hundred individuals, taking the same southerly direction over Sam's Point, but a few miles from the caves visited on the previous occasion.

If you can tell me where these countless thousands of hawks came from, whither they were bound, upon what they subsist while travelling, or if you can throw any other light upon the subject you will greatly oblige,

Yours most truly,

KIRK MUNROE.

**New Massachusetts Records for the Hawk and Great Gray Owls.**—I have just secured for the Thoreau Museum of Natural History, at the Middlesex School, Concord, Massachusetts, a specimen of the Hawk Owl (*Surnia ulula caparoch*) shot in the Lake Walden woods on the border of Lincoln, Mass., in February, 1907, and one of the Great Gray Owl (*Scotiaptex nebulosa*) shot in the Hoar woods, in Concord, Mass., in December, 1906. With these I have also secured specimens of the Great-horned, Snowy, Short-eared, Long-eared, Barred, Screech and Acadian Owls, all taken in Concord during the past few years. These were shot by Henry C. Wheeler, a trapper and woodsman of Concord. This Hawk Owl makes, I believe, the fourteenth record for the State, and the Great Gray the eighteenth. A careful investigation into their capture leaves no doubt in my mind as to their authenticity.—REGINALD HEBER HOWE, JR., *Concord, Mass.*

**Chestnut-collared Longspur (*Calcarius ornatus*) in Maryland.**—It is with pleasure that I add another species to the list of Maryland birds, namely, the Chestnut-collared Longspur, adult male. The specimen was shot August 20, 1906, by Captain Annsley Ludlam of Ocean City, Md., on the Thoroughfare farm just beyond the drawbridge across Assateague Bay and west of the north end of Ocean City and in full view of it. It was found on a sandy knoll with but little grass and that short and scrubby. Recognizing it as a bird he did not know he shot it and brought it to me. I packed it in ice and sent it to the Smithsonian Institution where it now is.—F. C. KIRKWOOD, *Oldtown, Alleghany Co., Md.*

**Nelson's Sparrow (*Ammodramus nelsoni*) on Long Island, N. Y.**—It is with satisfaction that Nelson's Sharp-tailed Sparrow is herewith recorded as taken within Long Island boundaries. This species was included in the 'List of the Birds of Long Island, New York,' which appears in the last number of 'Abstracts of the Proceedings of the Linnaean Society of New York,' with some hesitation, since search through the literature, collections of birds and generously offered field-notes of others failed to confirm my assumption that it was certainly a migrant. Dr. Bishop found it on the

Connecticut shore of Long Island Sound, in late September and October, and it was therefore made an exception, and included, as was clearly stated in the note on this species (p. 82), without its having ever been taken on Long Island. A specimen was first secured by the writer on October 5, 1907, at Rockaway Beach.—WILLIAM C. BRAISLIN, M. D., Brooklyn, N. Y.

**The Tree Swallow Nesting in the Delaware Valley.**—On July 7, 1907, while boating on the Rancocas we found a Tree Swallow's nest in a hole in a pile near Bridgeboro, Burlington County, N. J., less than five miles from the Delaware River. It contained five well incubated eggs. While this bird is a somewhat common breeder throughout the Pine Barren region of southern New Jersey it is rarely found nesting within the Delaware Valley.—CHRESWELL J. HUNT, Philadelphia, Pa.

**The Name of the California Least Vireo.**—In 'The Condor' for November, 1901, page 187, I named and described *Vireo pusillus albatus*, with type from Pasadena, distinguishing it from *Vireo pusillus* Coues, from Arizona. In his 'Birds of North and Middle America,' Part III, 1904, page 207, Mr. Ridgway describes *Vireo bellii arizonae*, with type from Tucson, and distinguishes it from *V. b. medius* of Texas and *V. b. pusillus* (page 208) of California. He cites my name *albatus* as a synonym of *pusillus*, and gives the type of *Vireo pusillus* Coues as from "Cape San Lucas, Lower California; coll. U. S. Nat. Mus."

I have not the original description of *pusillus* to refer to; but turning to Coues's 'Birds of the Colorado Valley,' 1878, page 531, I find in the synonymy "*Vireo pusillus*, Coues, Pr. Phila. Acad. 1866, 76 (descr. orig.; near Fort Whipple, Ariz.)." Further down the page the habitat is given as "Arizona, chiefly in its lower portions, and California from Sacramento to Cape St. Lucas." Furthermore, on the next page (532), Coues makes the following definite statement: "The type-specimen of *Vireo pusillus* was shot on Date Creek, in Arizona, June 6, 1865, [etc., in regard to circumstances of capture]"; and further, "it [the species] remained undescribed until the following year, when I overhauled my Arizona collections at the Smithsonian in Washington." Also, the description (on page 531) applies far better (in fact precisely) to the Arizona race than to that of California.

In view of the above statements by its original describer I cannot understand by what process the type-ship of *pusillus* could possibly be imposed upon a Cape San Lucas specimen. The type bird is stated by Coues to have come from *Arizona*, and that it was shot by himself at a certain place there. That specimen, according to Baird, in his 'Review of American Birds,' 1866, page 361, bore the "Smithsonian No. 40,696." In the ultimate recognition of a separate race in California, the name *pusillus* should apply to the Arizona form as restricted, while the California form is open to naming. This I did; and since intergradation has been shown to exist between the extremes in the species, how can the name of the California

Least Vireo be other than *Vireo bellii albatus*, and that of the Arizona Least Vireo other than *Vireo bellii pusillus*? — J. GRINNELL, Pasadena, California.

**Lawrence's and Brewster's Warblers and Mendelian Inheritance.**—In any discussion of the status of Lawrence's and Brewster's Warblers it is well to bear in mind that the facts, including the much greater abundance of Brewster's, are in accord with Mendel's Law of Heredity, supposing both forms to be hybrids between *Helminthophila pinus* and *H. chrysoptera*. I have written out an hypothetical explanation of the case along these lines, signalizing the two most prominent varying characters of the birds, namely, color of underparts and presence or absence of black throat patch. Familiarity with Mendel's Law is taken for granted, and I would refer anyone to whom it is not familiar to an excellent article on the subject by W. E. Castle in Volume XXXVIII of the Proceedings of the American Academy of Arts and Sciences, January, 1903.

Let W stand for "white below"; w stand for "absence of white," i. e., "yellow."

Let P stand for "plain throat"; p stand for "absence of plainness," i. e., "black throat."

Then *H. chrysoptera* is pW; *H. pinus* is Pw; PW (the pure dominant) is Brewster's Warbler; pw (the pure recessive) is Lawrence's Warbler. *H. chrysoptera*  $\times$  *H. pinus* is pWPw, but in plumage PW, Brewster's Warbler. All the first generation hybrids will be Brewster's Warbler in plumage. In the next generation there will be pure Golden-winged Warblers, pure Blue-winged Warblers, pure Brewster's Warblers, and pure Lawrence's Warblers; also mixed birds of the first three forms, but none of the last form, which, being recessive, comes to light only when pure. The original hybrids then (which will be all Brewster's in plumage) must be fertile with one another or with the parent species for any Lawrence's to occur; and if they are perfectly fertile Lawrence's must still remain a small minority. After the first generation the proportion of plumages of birds with mixed parentage should be: 9 Brewster's, 3 *chrysoptera*, 3 *pinus*, 1 Lawrence's. See Table.

In plumage		In plumage	
PWPW	Brewster's	PWPw	Brewster's
pwpw	Lawrence's	PWpW	"
PwPw	pinus	PwPW	"
pWpW	chrysoptera	pWPW	"
Pwpw	pinus	PWpw	Brewster's
PWpw	chrysoptera	pWPw	"
pwPw	pinus	pwPW	"
pwpW	chrysoptera	PwpW	"

9 Brewster's, 3 *chrysoptera*, 3 *pinus*, 1 Lawrence's.—JOHN TREADWELL NICHOLS, New York City.

**The Prairie Warbler near Chicago.**—I beg to report taking a male Prairie Warbler (*Dendroica discolor*), at Riverside, Ill., ten miles west of Chicago, on May 8, 1907. This is a rare species here. Apparently the only definite records for this locality of those of Mr. Geo. Clingman of June, 1878, and May, 1892, mentioned by Mr. F. M. Woodruff in his 'Birds of the Chicago Area.'—L. E. WYMAN, *Chicago, Ill.*

**The Kentucky Warbler in Southern New Jersey.**—On May 19, 1907, Mr. Richard F. Miller and myself found two Kentucky Warblers along the Pensauken Creek. While locally an abundant species on the Pennsylvania side of the Delaware (in fact a common breeder in Fairmount Park, Philadelphia), this bird seems rarely to cross the river. I can find no other records for southern New Jersey.—CHRESWELL J. HUNT, *Philadelphia, Pa.*

**Another Cañon Wren Record for Colorado.**—There are few records of this wren (*Catherpes mexicanus conspersus*) in Colorado. To-day (October 20, 1907) I saw one in a yard stacked with cement building blocks. It was very tame and let me watch it from a distance of three or four feet.—W. L. BURNETT, *Longmont, Colo.*

**Bewick's Wren (*Thryomanes bewickii*) on the Coast of South Carolina.**—On October 16, 1907, I saw and positively identified a bird of this species as it rested for about a minute in a live oak tree, which was within sixty feet of a negro house, situated on Oakland plantation, Christ Church Parish, but failed to secure it as it flew into a dense thicket of weeds, briars and bushes. There was no mistake in the identification, as the long fan-shaped tail was diagnostic; besides, it was not the first Bewick's Wren I had ever seen alive, for I found this species in positive abundance at Waukeenah, Florida, in 1894 (see Auk, Vol. XII, 1895, p. 367).

My friend Mr. Herbert Ravenel Sass (Assistant at the Charleston Museum), secured a specimen at the Navy Yard (within six miles of Charleston) on October 17. This specimen is the first that has ever been taken in the low coast region of the State, the bird being confined almost exclusively to the Alpine, Piedmont, and upper counties, and rare or entirely absent south of Richmond County, as it delights in a rolling or hilly country.

Mr. Leverett M. Loomis found Bewick's Wren breeding at Caesar's Head (3,118 feet), Greenville County (Auk, VIII, 1891, p. 333).—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

**A Parasitic Fly Injurious to our Native Birds.**—It seems to be well known that in England and on the Continent the nestlings of a number of small birds are not infrequently parasitized by flies, often times with fatal results. It is not so well known that one or more species of these parasitic flies have obtained a foothold in the United States, although

Hough records the presence in this country of two species in 1899 (see *Zoolog. Bull.*, Vol. II, p. 289), stating that they are very rare. I find also that a specimen of one of these species (*Protocalliphora chrysorrhæa*) is in the National Museum from the top of the Las Vegas range, New Mexico, and a second from the White Mountains of New Hampshire, the latter collected by H. K. Morrison, probably about the year 1875.

The subject is not without interest to bird lovers, since during the past summer two successive broods of Bluebirds in Wellesley Hills, Massachusetts, were parasitized by one of the species, and of the eight nestlings only one escaped. The living larvæ and pupæ from the second brood were forwarded to the Bureau of Entomology in Washington and the flies were reared and were identified by Mr. Coquillett as *Protocalliphora chrysorrhæa* Meigen. In appearance this fly so closely resembles a common blue bottle as to be readily mistaken for it. Instead of laying its eggs on carrion, however, this fly lays them more or less frequently on nestling birds, upon the living flesh of which the maggots feed. Truly, sometimes mother Nature seems to be a bit indifferent to the sufferings of her creatures.

How common these flies are in Massachusetts and how extensive their range is in the United States no one seems to know, but it is to be hoped that bird students will bear the matter in mind and report all cases of parasitism coming to their attention. Should they have bird boxes, if they suspect anything wrong with the broods, it will be well to promptly examine the nestlings and destroy the parasites in whatever stage they may happen to be.

Possibly birds that build in boxes or holes, like Swallows, Bluebirds, Woodpeckers, Wrens and others, are more likely to be victimized than those rearing their young in open nests, but the latter sometimes suffer in Europe, and it is highly probable that the young of our Robins, Song Sparrows, and others of our native species also may serve as hosts of this fly. The loss in the two broods noted above was nearly 90 per cent., and if these flies become at all numerous (even now they may be commoner than is suspected) our native birds will be threatened by a new danger.

For the facts in regard to the Bluebirds and for the specimens by means of which the identity of the parasitic fly was determined we are indebted to Mrs. Emma F. Everett, of Wellesley Hills, whose solicitude for the welfare of her Bluebird tenants prompted investigations which led to the discovery of the parasites.—H. W. HENSHAW, *Biological Survey, Washington, D. C.*

## RECENT LITERATURE.

**Widmann's 'Birds of Missouri.'**—Mr. Widmann's 'Catalog of the Birds of Missouri'<sup>1</sup> supplies a much needed list of the birds of that State. As the author states, this is the first attempt at a list for the State of Missouri. "It is based," he informs us, "chiefly on personal observations made during the last thirty years"; but he has also availed himself of the literature bearing on the subject, and of much unpublished information contributed by other observers, whom he mentions in his introduction, including the loan from the Bureau of the Biological Survey of the migration reports on birds of Missouri from 1884 to 1905. With such resources, and Mr. Widmann's well known abilities as an observer and a writer, one is led to expect a thoroughly trustworthy and full report upon the subject in hand, and this volume of nearly 300 pages fully justifies such anticipation.

The twenty pages of introductory matter give a résumé of the literature bearing upon the ornithology of the State; an explanation of the terms used to denote relative abundance; an account of the faunal areas, the climate and topography; remarks on the decrease of birds and the contributing causes; and some good suggestions respecting bird protection. The arrangement and nomenclature of the list is that of the second edition of the A. O. U. Check-List and its supplements. "Synonyms, both scientific and English, used in the works of American ornithologists, principally those used by Wilson, Audubon, Nuttall, Baird, and Coues, are given to enable students to find their way through the many and great changes in nomenclature made since the first of these books was printed ninety-eight years ago,"—merely the names, however, without citation of the authors. "The catalog is confined," the author tells us, "to a detailed treatment of the geographic distribution of each species and subspecies in accordance with the latest sources of information. This is followed by a statement of its range in Missouri, manner of occurrence in regard to season and relative abundance, dates of arrival and departure, and such notes as may be helpful to the student in the search of rare species." Those known to have bred in the State, or whose breeding in the State is "almost certain," are marked with an asterisk. "The catalog contains not only species and subspecies fully authenticated, but also a few of such highly probable occurrence that it seems only a question of time and opportunity to establish the proof of their occurrence." They are not, however, relegated to a 'hypothetical list, since in this way he believes they might be overlooked and escape the attention they deserve. Extirpated and introduced species are also included in due systematic

<sup>1</sup> A Preliminary Catalog of the Birds of Missouri. By Otto Widmann. Trans. Acad. Science of St. Louis, Vol. XVII, No. 1, pp. 1-288. "Issued Nov. 16, 1907." Also separate, without statement of place of publication.

sequence. "The total number of species and subspecies contained in the catalog is 383, of which 162 are breeders. Species not actually taken within the limits of the state are distinguished by being put in brackets. Of this kind there are 30, which subtracted from 383 leave as the present status (July 8, 1907) 353 actually observed species and subspecies for our state."

The manner of occurrence and seasons of migration are stated with fulness, and authorities are cited for the records of the rarer species; the data respecting the former abundance and the extirpation of the Wild Pigeon and Carolina Paroquet are very fully given, as are the notes respecting the great decline in numbers of many other species. Taken as a whole, Mr. Widmann's 'Catalog' as an excellent summary of the ornithology of Missouri, for which his fellow ornithologists may well feel deeply grateful.—J. A. A.

**Jones on 'The Development of Nestling Feathers.'**<sup>1</sup>—"The purpose of this paper," says the author "is to give a more complete account of the development of the down, or Neossoptile, than has been given by previous writers and to show the true relation of this structure to the first definitive feather." This relation is thus stated: "The first down and its succeeding definitive feather are produced by one continuous growth, and therefore cannot be regarded as two distinct feathers. The first down is the plumulaceous tip of the first definitive feather." Contrary to the conclusion of some previous writers, the neossoptile is shown not to possess a shaft nor a true quill, but to be always in direct continuity with the barb-vanes of the first definitive feather. In other words, the neossoptile is only a more or less differentiated distal part of the first teleoptile.

These investigations are based on the study of a large number of species, representing many families, and relate to (1) the development of the nestling down (plates i-iv, and (2) the relation of the down to the first definitive feather (plates v-viii). The first definitive feather with down attached is shown in figures 56-138 (plates v-viii) from a large number of species "by direct prints from the feathers." The paper is thus one of much interest and an important contribution to the subject under investigation.—J. A. A.

**Beebe on Geographic Variation in Birds.**<sup>2</sup>—This paper consists of six Parts—(1) Historical; (2) Dichromatism; (3) Sporadic Melanism; (4) Experimental (*Hylocichla* and *Zomotrichia*); (5) Experimental (*Scardafella*).

<sup>1</sup> The Development of Nestling Feathers. By Lynds Jones. Laboratory Bulletin No. 13, Oberlin College, Oberlin, Ohio, 1907. Pp. 1-18, pl. i-viii.

<sup>2</sup> Geographic Variation in Birds with especial reference to the Effects of Humidity. By C. William Beebe, Curator of Birds, New York Zoological Society.—Zoologica: Scientific Contributions of the New York Zoological Society, Vol. I, No. 1, Sept. 25, 1907. Pp. 1-41, with 5 half-tone plates.

Part I gives a general statement of the conclusions of various authors respecting the influence of climatic conditions upon the coloration of animals, and the results of certain experiments upon a genus of coleopterous insects (*Leptinotarsa*) by Prof. W. L. Tower. Part II recounts certain well known instances of melanism in wild birds and mammals, and other dichromatic phases among birds. Part III enumerates numerous cases of sporadic melanism among cage birds. Parts IV and V deal with Mr. Beebe's own experiments with Wood Thrushes, White-throated Sparrows and Inca Doves.

Mr. Beebe's experiments consisted in confining a specimen of the Wood Thrush, and of the White-throated Sparrow, and several specimens of the Inca Dove, in a superhumid atmosphere and noting the results. The food given these birds was the same as that upon which other specimens of these species were fed, so that this factor is eliminated as a possible cause of the changes observed in coloration. The Wood Thrush showed very little change at the first moult after confinement, but markedly increased change with the second moult, soon after which it died. With the second moult the black spots tipping the feathers of the under parts became much enlarged, with other minor changes in other parts of the plumage.

The White-throated Sparrow, confined under similar conditions, became, after two moults, strongly melanistic, the change affecting nearly all parts of the plumage. The Inca Doves, several of which were subjected to the same conditions, and for longer periods, showed not only a general darkening of the plumage but various other suggestive modifications. In the case of the doves, as in the other birds, there was "a radical change in the pigmentation of the plumage . . . with each succeeding annual moult." *In no instance, however, was there a change of color without moult.*

In the case of the Inca Doves: "When the concentration of the melanin has reached a certain stage, a change in color occurs, from dull dark brown or black to a brilliant iridescent bronze or green. This iridescence reaches its highest development on the wing coverts and inner secondaries, where, in many genera of tropical and subtropical doves, iridescence most often occurs."

In discussing the significance of these changes Mr. Beebe finds reasons for differing from some of the conclusions reached by Prof. C. O. Whitman from the study of various species of doves and pigeons kept in confinement for investigation, under, however, normal atmospheric conditions. In respect to the Inca Doves, says Mr. Beebe: "The increase of pigment in a single individual under humidity during a comparatively short period of time, and the subsequent correlated development of metallic tints, assume a new importance when we consider that, in these experiments at least, mutation and natural selection have no place."

Professor Whitman assumes that "the direction of evolution can never

be reversed," on the basis of his experiments with domestic pigeons. Mr. Beebe found that in placing his Inca Doves (*Scardafella inca*) in an artificially produced tropical atmospheric environment, the same individual passed through, by successive moults, several color phases closely resembling tropical forms of the genus *Scardafella*. Assuming, as it is safe to do, that the genus *Scardafella* is of tropical origin, the characters thus acquired are seemingly atavistic, and that "this humidity induced variation is neither fortuitous nor directionless." These interesting and significant results open up, says the author, "innumerable new vistas of unexplored fields," which we trust he will be able to unfold to us through further experiments with these and other species.

The bearing of all this upon natural selection and ontogenetic species is discussed at some length. Respecting the latter, he considers it would be unreasonable to discard, as has been proposed, species and subspecies "which are ontogenetically interchangeable under experimentation or in a new environment," should such be found. This valuable and suggestive paper closes with a bibliography of the works referred to or directly bearing on the general subject, which we would hold up as an example of 'how not to do it'; not in personal criticism of Mr. Beebe, but of a method all too common in this day of bibliographies, where a thesis or a memoir is counted incomplete unless the author supplies a list of the papers known to him as bearing upon the subject in hand. In many, many instances we find an author cited, so to speak, in general terms,—so vaguely that one is merely guided to the volume, or to the number of a periodical, if he wishes to consult the paper or passage cited, and must hunt out for himself, as best he can, its exact place, at the loss of more or less time and the cost of more or less needless vexation at the author who through slovenliness or indolence is the cause of his trouble.

To cite, in illustration, Mr. Beebe's present attempt at a bibliography:

"FAXON, WALTER. 1886. Another Black Robin. *The Auk*, vol. iii."

"GÜNTHER, A. 1886. Note on the Melanotic Variety of the South African Leopard. *Proc. Zool. Soc. Lond.*, 1886."

"HUMBOLDT, ALEXANDER VON. 1808. *Ansichten der Natur.*"

"OGILVIE-GRANT, W. R. 1897. A Hand-book to the Game-birds. Vol. ii."

And so on, *ad infinitum*, in this and numberless other modern bibliographies. If a work or paper is worth citing, it should be cited so that the pertinent passages can be found without exasperating loss of time. If one is curious to know what Humboldt had to say in relation to humidity and coloration, or whatever it is that may be referred to, where, under such guidance, are we to find it in a work consisting of several volumes? Or if we wish to know about Mr. Faxon's black robin, or Dr. Günther black variety of the leopard, why should we be compelled to hunt in the indexes under either the name of the author or the animal, or both, to find the information wanted, when the compiler of the bibliography could have given us the page reference with no additional trouble to himself?

Besides, all this has a bad look, prejudicial to the author, who is thus open to the suspicion of lacking literary experience or of being careless and slipshod in his work, either of which suspicions may do him injustice. If an author adds a bibliography to his paper, it is presumably to place his sources of information at the service of others, and not for the purpose of tantalizing or annoying subsequent investigators. The least one has a right to expect is a full and correct citation, giving both the opening and closing pages, if exceeding a page of two in length; while a line or two of pertinent annotation, where required to make clear the bearing of the paper cited, is a boon future investigators along the same lines will recognize with gratitude.

In closing we wish to say again, that Mr. Beebe's present paper is not the cause, but merely the occasion, for this bit of criticism of indolent or slovenly bibliographers, whose number is unfortunately *legion*.—J. A. A.

**Braislins's Birds of Long Island, New York.<sup>1</sup>** — Probably no portion of North America of similar area has been the scene of more careful field work in ornithology than Long Island, New York,—a strip of land about 120 miles long by 8 to 18 in breadth, mostly low and little diversified, rarely rising into hills of a 100 feet in altitude along its northern shore. It is separated from the main land on the north by Long Island Sound, and is exposed on its southern front to the broad Atlantic. From the days of Giraud and the elder Lawrence, it has been the favorite resort, not only of gunners in quest of its abundant water-fowl, but of ornithological observers and collectors. A list of some 250 titles appended to Dr. Braislins's paper attests the harvest reaped from this fertile field, exploited so energetically by William Dutcher from 1879 to 1904, and by the author of the present paper during the last decade, and by Dwight, Foster, Chapman, Helm, Howell, the Lawrences, and others at different periods. Dr. Braislins has done well to gather these scattered records into one condensed and consistent whole, citing the dates and authorities for the rarer species, and giving concise statements of the manner of occurrence of the more common ones. The total number of species now recorded is 364; including three introduced species, and various waifs and strays from remote regions, including several from Europe. The list has been most carefully prepared, and its completeness is beyond question. The bibliography is exceptionally well done, the titles and references being fully given, and its value further increased by brief annotations to many of the titles.—J. A. A.

**Finley's 'American Birds.'**<sup>2</sup> — Notwithstanding its broad title, Mr.

<sup>1</sup> A List of the Birds of Long Island, New York. By William C. Braislins. Abstr. Proc. Linnean Society of New York, for the year ending March, 1907, pp. 31–123. Also separate.

<sup>2</sup> American Birds | studied and photographed | from Life | By | William Lovell Finley | Illustrated from photographs by | Herman T. Bohlman | and the Author | Charles Scribner's Sons | New York 1907 — 8vo, pp. xvi + 256. October, 1907.

Finley's interesting book is limited to about two dozen species of American birds, practically all of them western, with sometimes eastern names. Its scope and character is thus stated by the author: "In this book no attempt has been made to include all the different bird families, but a series of representative birds from the hummingbird to the eagle has been selected. Each chapter represents a close and continued study with camera and notebook at the home of some bird or group of birds,—a true life history of each species. It is the bird as a live creature, its real wild personality and character, that I have tried to portray." The twenty chapters treat of about twenty-five species, each of which is illustrated by a series of excellent photographs of the living bird, its nest, eggs and young, the latter often at several different stages of growth. Although localities and dates are usually omitted, the stories are detailed and pleasantly written, and give a vast amount of information about the ways of life and individualities of the species here so faithfully and sympathetically portrayed and described. There is also entire absence of technicalities in the treatment, which lapses at times into loose statements hardly to be looked for in a book naturally expected to be scientifically accurate as well as popular, in the sense of being non-technical, as where the author tells his readers: "But a list of birds that every one should know could not be complete without our two commonest studies in blue, the Bluebird (*Sialia sialis*) and the Blue Jay (*Cyanocitta cristata*). In all our woods, from the Atlantic to the Pacific, one may find these two, one gentle and friendly, the other bold, boisterous, and untrustful." And this despite the fact that neither of these species is found nearer the Pacific coast than the eastern base of the Rocky Mountains! The "young Blue Jays" shown in the accompanying illustrations are *Aphelocoma californica*, the California Jay, and the Bluebirds are evidently the Western Bluebird, *Sialia mexicana occidentalis*. Such lapses from the truth, whether intentional or otherwise, are apt to leave with the reader who knows better, a rather unpleasant impression.—J. A. A.

Ihering's Birds of Brazil.<sup>1</sup> — This is the first of a series of volumes on the Fauna of Brazil, in which will be given a synopsis of the present knowledge of the animals of this great country, to be published by the Museu Paulista. The present volume is an annotated Check-List of the birds, so far as known to the authors, and follows the classification and nomenclature of the British Museum 'Hand-list' and 'Catalogue of Birds.' Although the rule of priority is recognized as mandatory, and the tenth edition of the 'Systema Nat rae' of Linnaeus (1758) is regarded as the

<sup>1</sup> Catalogos | da | Fauna Brazileira | Editados pelo | Museu Paulista | S. Paulo — Brazil | — | Vol. I | As Aves do Brazil. | Pelo Prof. Dr. Hermann von Ihering | Director do Museu Paulista | e | Rodolpho von Ihering | Custos do Museu Paulista | [vignette] Sao Paulo | Typographia do Diario Official | 1907 — 8vo, pp. xxxviii + 485, and 2 maps, + 3 leaves = 2 title pages and contents.

proper starting point of binomial nomenclature, the authors fail sometimes to follow these announced principles through adopting a system of nomenclature beginning with the twelfth edition of Linnaeus (1766).

An introduction of some 20 pages contains a sketch of ornithological exploration in Brazil, its faunal regions as indicated by a study of its avifauna, zoogeographical considerations, the preparation of the present catalogue, and questions of nomenclature and terminology, a list of the principal literature, and a systematic index. The two maps show (1) the distribution of forests and campos in South America, and (2) the zoogeographic zones of Brazil and their subdivisions. These are indicated as Fauna amazonica, Fauna do Brazil central, and Fauna do Brazil littoral, each with a subdivision.

The present volume enumerates 400 genera, 1567 species, and 213 subspecies, of which 1102 species are represented in the Museu Paulista by 6984 specimens. The technical name of each species in the Catalogue is followed by a reference to the volume and page of the British Museum 'Catalogue of Birds' where it is described; by its vernacular name; by the citation of references to it, if any, in von Ihering's papers in the 'Revista do Museu Paulista,' and sometimes other references; by a statement of its geographical distribution, in general terms, and by a list of localities represented by specimens in the Museu Paulista. In case of species or subspecies described since the publication of the British Museum Catalogue a reference is given to the place of original description. There are also often brief technical notes on questions of nomenclature and the status and relationship of forms. In the Addenda (pp. 406-423) are further notes on a number of species, with the addition of others described during the printing of the work, etc. An Appendix of fifteen pages contains reprints of descriptions of four species of hummingbirds described by E. J. da Silva Maia in 1843 and 1852. Alphabetic indexes to both the scientific and vernacular names close this important and highly useful volume.—J. A. A.

**Beal on Birds as Conservators of the Forest.**—In a paper of 40 quarto pages,<sup>1</sup> with 12 colored plates, Professor Beal treats of the utility of birds as protectors of forests. About one half of the text is, as would be expected, devoted to the Woodpeckers, the rest to a varied assortment of birds belonging to a number of families, as Nuthatches, Creepers, Jays, Finches, Warblers, Thrushes, Vireos, Cuckoos, etc. The verdict is reached that birds, particularly tree-inhabiting species, are of decided economic importance. The woodpeckers are ranked as of the highest value as destroyers of injurious tree-infesting insects, since they seek out and destroy the wood-boring larvæ of many noxious species. Other birds search the bark, and others still the leaves, for caterpillars and other insect pests. The

<sup>1</sup> Birds as Conservators of the Forest. By F. E. L. Beal. Rep. New York Forest, Fish and Game Commission, 1902-3, pp. 235-274, with 12 colored plates, by L. A. Fuertes. Published November, 1906.

rôle played by numerous species is distinctly outlined, based on the examination of the contents of their stomachs. The report is made attractive to the general reader not only by the valuable information it contains but by a series of beautiful chromo-lithographic plates, from drawings made by the well-known bird artist Fuertes. The species figured are the Red-headed Woodpecker, adult and young; Northern Hairy Woodpecker, White-backed Three-toed Woodpecker, Flicker, Yellow-bellied Sapsucker, Black-backed Tree-toed Woodpecker, Red-breasted Nuthatch, Blackburnian Warbler, Mourning Warbler, Yellow-billed Cuckoo, Solitary Vireo, Black-capped Chickadee, Brown Creeper, Blue Jay, and American Red Crossbill, all well adapted for striking effects.—J. A. A.

**Beal on California Birds in their Relation to the Fruit Industry.<sup>1</sup>**—This 'Bulletin,' is based on investigations by the writer in California during the fruit seasons of 1901, 1903, and 1906, covering a period of about nineteen months. Dr. C. Hart Merriam, Chief of the Biological Survey, in his 'Letter of Transmittal' to the Secretary of Agriculture, says: "The investigations embodied in this report were undertaken with a view to the accurate determination of the economic status of every species of California bird that inhabits orchards, in order that it may be possible for the fruit raiser to discriminate between friends and foes; and for the added purpose of suggesting remedial measures for the protection of fruit from destructive species." Professor Beal, in summarizing his results, insists "that sound public policy everywhere forbids the destruction of birds on a large scale for the purpose of protecting orchard fruits. Wholesale slaughter of birds in the supposed interest of the orchardist is fortunately rare and often proceeds from a mistaken idea of their economic relations. When it is understood that the damage by certain species is local and exceptional, that the birds in question are on the whole beneficial and that their destruction will be a loss to the State, the farmer and the orchardist are usually willing to adopt less drastic measures in defense of their crops and to spare the birds for the sake of the general weal."

After discussing the causes and general conditions of depredations by birds, the birds that injure fruit in California are passed in review and the evidence bearing on the economic status of each is given in much detail, based on the examination of their stomach contents. The House Finch (*Carpodacus mexicanus frontalis*) is stated to have been the subject of more complaint than all other species of birds together. Yet the examination of over 1200 stomachs shows that fruit is far from being its principal food, which consists mainly of the seeds of weeds, and that a far greater quantity of fruit is eaten by other species, as the Cedar Waxwing and the

<sup>1</sup> Birds of California in Relation to Fruit Industry, Part I. By F. E. L. Beal, Assistant, Biological Survey, U. S. Department of Agriculture. Biological Survey, Bulletin No. 30, 8vo, pp. 100, with a colored frontispiece (California Bush-Tit) and 4 half-tone plates. Issued Nov. 11, 1907.

Robin. The Western Tanager (*Piranga ludoviciana*) becomes occasionally a nuisance in the orchard, but for the most part is a resident of other districts than the fruit growing region. The Swallows, as a group, are exceptionally beneficial birds, subsisting almost wholly, at all times, upon insect food. The Vireos also subsist chiefly upon insects, and are innocent of depredations upon fruit, but they possess a fondness for coccinellid beetles, the enemies of the bark scale and plant lice. The Warblers, as would be expected, come in for unqualified praise as beneficial species, their food being not only almost wholly insectivorous but consisting largely of noxious species. The Wrens, Creepers, Nuthatches and Titmice have also an equally good record; but the Mockingbird and certain of the Thrushes, including the Robin, but not the Bluebirds, partake more or less of fruits; but the verdict, for even the Robin, is that they are far more beneficial than injurious.

This valuable report is illustrated by one colored and three plain plates of as many species of birds, drawn by Fuertes, and one illustrating the seed diet of the House Finch. The evidence here presented should go far to place the smaller birds of California in their true light of benefactors rather than foes of the orchardist and farmer, the debit and credit accounts, presented apparently with great fairness and from positive information, balancing greatly in their favor.—J. A. A.

**Howell on the Relation of Birds to the Cotton Boll Weevil.<sup>1</sup>** — This is the third report of progress on the investigation of birds in their relation to the rapidly spreading cotton boll weevil pest in Texas and Louisiana. "As a result of investigations carried on intermittently during five seasons 43 species of our native birds have been found to feed on the weevil," some of them in summer, others in winter. The results of these thus far rather limited investigations are given in detail for each species. Of the 86 species studied in this connection, just one half are boll-weevil-eating, and one half are not. But birds have been proved to be so important a check upon the spread of this pest that recommendations are presented for the legal protection of certain weevil-eating species now wholly unprotected in Texas, the erection of nesting boxes for Martins, and the dissemination of information regarding the important aid afforded by birds in holding in check this grave pest. Among the most useful species in this respect are the Flycatchers, Orioles, Blackbirds, certain of the Sparrows and Finches, the Swallows, etc. The report is illustrated with designs for Martin houses, text figures of the Barn Swallow, Kingbird and Crow-Blackbird, and a colored plate of the Baltimore and Orchard Orioles.—J. A. A.

<sup>1</sup> The Relation of Birds to the Cotton Boll Weevil. By Arthur Howell, Assistant Biologist, Biological Survey. U. S. Department of Agriculture, Biological Survey, Bulletin No. 29. Pp. 30, 1 colored plate (frontispiece), and 6 text figures.

**Riddle's 'A Study of Fundamental Bars in Feathers.'**<sup>1</sup>—This is a study of abnormalities in feathers and their cause. Defects in the development of feathers are not uncommon, and are not confined to particular species, nor to any particular condition of existence, as to birds in a state of domesticity, but apparently occur in all birds. A feather does not present a perfect, uniform continuity from tip to tip, but is made up of an apposed series of faint 'fundamental bars,' and the defects are found to appear at these points of apposition. It is assumed that each segment or 'fundamental bar' represents a day's growth, and also the amount of feather growth between two low blood-pressure. The period of lowest daily blood pressure has been determined as occurring between 1 and 6 A. M. "Since," says the author, "these defective lines are laid down at approximately the same time each day — as is proved by the regularity in the distances separating them — we are forced to the conclusion that the defective *lines* are normally laid down at night, and that a lowering blood-pressure is associated with the production of defective *areas*, and, therefore, of defective lines, for, that the defective line stands for the initial stage of the defective area is as certain as that a defective area has more dimensions than a line." These conclusions are based on experimental and histological research, and appear to have an important economic bearing. The value of the ostrich plume output for South Africa alone is annually depreciated, it is said, to the extent of £250,000 by defective development, which Mr. Riddle traces to malnutrition due to defective diet and other life conditions that it may be possible to remedy. Such researches should also give the final quietus to the belief in 're-pigmentation' and 'rejuvenation' of old, full-grown feathers, which seems to have still a persistent hold upon the minds of certain ornithologists abroad — a relict of former days when feather growth was little understood, and casual observation of external appearances were awarded undue value.—  
J. A. A.

**Hopkins on the Bony Semicircular Canals of Birds.**<sup>2</sup>—The purpose of this investigation was to determine "whether there is any relation of the comparative dimensions of the bony semicircular canals of the ear of birds, either to mode of locomotion, or to genetic affinities." These canals were examined in about 75 species of birds, representing all orders, and all modes of locomotion — running, swimming, diving, flying, and all degrees and modes of flight. The measurements are tabulated. The results show (1) that birds of the most diverse forms of locomotion and very diverse affinities have the same relative sizes of semicircular canals; (2) that

<sup>1</sup> A Study of Fundamental Bars in Feathers. By Oscar Riddle. Biological Bulletin, Vol. XII, No. 3, February, 1907, pp. 165-174.

<sup>2</sup> On the relative dimensions of the Osseous Semicircular Canals in Birds. By May Agnes Hopkins. Biological Bulletin, Vol. XI, No. 5, October, 1906, pp. 253-264.

allied genera may exhibit great differences in this respect. Hence, the types of canals bear no relation to different modes of locomotion, and have also no taxonomic value. Five different types are described and figured; but "in type 2 occurs *Cathartes*, one of the best flyers, and in the same group *Geococcyx*; which seldom flies but is one of the ablest runners." This appears to be the first attempt to investigate the relation of the bony canals in birds' ears to locomotion, or to genetic affinity, and are thus of special interest, since the relative size and structure of these canals has been supposed to have some relation to power and manner of flight. Presumably a knowledge of these structures would be of some use in taxonomy, but it proves to have such importance only within narrow limits.—J. A. A.

**A Twenty-five Year Index to 'The Auk' and 'Nuttall Bulletin.'**<sup>1</sup> — In November, 1899, the Council of the American Ornithologists' Union appointed a Committee to prepare for publication an Index to 'The Auk' and its predecessor, the 'Bulletin of the Nuttall Ornithological Club,' to cover the twenty-five year period from 1876 to 1900.

The Committee was a large one, and proceeded at once to its work. Each volume was indexed by two persons independently; their work was collated by a third member of the Committee, and verified by Dr. Jonathan Dwight, Jr., the Chairman of the Committee and Editor of the Index. The work was thus very laborious and time-taking, some 34,000 cards having been turned in in duplicate by the indexers to the editor for revision and preparation for the press. This, with unexpected delays in the printing, has deferred the appearance of the volume beyond the anticipated date of publication, but the final results are eminently satisfactory, and form a well-printed volume of nearly 450 pages. As stated by the editor, it forms "a guide to a large part of the ornithological literature of the last quarter of the nineteenth century." The references are classified and arranged in a way to facilitate finding any information required. The titles include papers and works reviewed as well as the papers and notes here first published, arranged in chronological sequence under the names of the authors. Under localities (as States and countries) are entered all geographical references, alphabetically by the names of the authors, followed by citation of volume and page. Species are entered primarily under their respective genera, under their A. U. O. Check-List names, 1895 to 1900, when North American, or their current names in Sharpe's 'Hand-list' or Ridgway's 'Birds of North and Middle America' when extralimital, with cross-references to their synonyms. (For index convenience subspecies are treated

<sup>1</sup> Index | to the | Bulletin | of the Nuttall Ornithological Club, Volumes I-VIII — 1876-1883 | and to its continuation | The Auk, Volumes I-XVII — 1884-1900 | Compiled by a Committee of the American Ornithologists' Union | Edited by | Jonathan Dwight, Jr., M. D. | [vignette] New York, | Published by the American Ornithologists' Union | 1907 — 8vo, pp. viii + 426. Price in paper covers, \$3.25 net; bound in cloth, \$3.75 net. Orders should be addressed to Jonathan Dwight, Jr., Treasurer, 134 West 71st St., New York, N. Y.

as species.) They also are given alphabetically with a cross-reference to the main entry. The species references are classified to indicate the nature of the information conveyed, whether relating to distribution, habits, measurements, migration, moult, nomenclature, plumage, etc. This is secured by the use of special type, and abbreviations preceding the references, etc.

For this admirable piece of work the members of the American Ornithologists' Union and ornithologists at large are indebted primarily and mainly to the labors of Dr. Dwight, who has devoted a vast amount of energy and time to the work, with no other recompense than the consciousness of accomplishing a great and much needed task in an exceptionally satisfactory manner. For we know of no index to scientific literature comparable with this in point of detail and utility. Sets of the publications to which it relates will be incomplete without this index volume, and it will be an invaluable reference book for those who wish to know the contents of the volumes they do not possess.—J. A. A.

**'Dan Beard's Animal Book.'** — "This book," says the author, "is not a Natural History, neither is it a so styled Nature Book.<sup>1</sup> It is simply a book of animals and is made up from the Author's personal notes and sketches made in the fields and forests for his own amusement and not with a view to publication; . . ." "This book," he says again, "was not written for scientific reasons or even for profit. As the boys would say, it was written 'for the fun of it,' or as their parents might say, it was written 'for the love of it!'" This is evident from every page, and it is for this reason all the more interesting, both the illustrations and the text. It is replete with humor, with original information about our native mammals, birds, newts, frogs and toads, lizards, etc., by a born artist, a humorist, and a devoted lover of nature. As to the motive, "If this book succeeds in awakening a love for wild Nature in even a small portion of the American youth it will be counted as a success. Well barbered and manicured Nature, closely shaven lawns and neatly trimmed hedges are perfectly proper in yards to suburban houses, but contact with Nature without a hair-cut and unshaven is what gives strength to one's muscles, brightness to one's eyes, and makes the red blood dance in one's veins." "What we need and what is coming is an unselfish, passionate love of Nature, not for Nature's sake, but for humanity's sake; such a love is wholesome, manly, invigorating and uplifting."

The last fifty pages relate wholly to birds, and the last chapter (pp. 510-538) is interestingly ornithological, with many apt original renderings of bird songs, and field notes.—J. A. A.

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<sup>1</sup> Dan Beard's | Animal Book | and Camp-fire Stories. | By |Dan Beard | Author of "The American Boys' Handy Book," "Jack of all Trades," etc. | Illustrated by the Author | New York | Moffat, Yard and Company | 1907 — 8vo, pp. vii + 538, with over 100 illustrations (plates and text figures, several of the former colored). Price \$1.60.



**Annual Report of the National Association of Audubon Societies for 1907.**<sup>1</sup>—As usual, the annual report of the President of the National Association of Audubon Societies, Mr. William Dutcher, is an important document, ornithologically as well as from the standpoint of bird protection. It consists of four parts, the Report of the President (pp. 285–300), in which he gives a general summary of the work of the year, with recommendations for future lines of action; the Report of the Secretary (pp. 300–303), in reference to his own personal work in the South and elsewhere as an official representative of the Association. Reports of Special Agents (pp. 303–327),—of Edward Howe Forbush on his work in the New England States; of H. H. Kopman, in the Gulf States; of William L. Finley, in Oregon and Washington; of John B. Watson, on the condition of the Noddy and Sooty Tern Colony on Bird Key, Tortugas, Florida; of A. C. Bent, on the condition of bird colonies on Cobb's Island, Va.; of Arthur H. Norton, on the protected bird colonies of the coast of Maine. The Reports of State Societies (pp. 328–361), in alphabetic sequence, relate to the work done by local societies in 30 States and the District of Columbia. Then follow a list of Members and Contributors, and the Treasurer's report.

The President, in his summary of 'Results Achieved' during the year thus refers to the subject of animal refuges or reservations: "One of the most important results secured by this Association since its organization has been the large number of reservations set aside as bird refuges and breeding homes by President Roosevelt. During the present year six have been added, all of which are the ancestral homes of birds, and they will, in the future, be under the direct supervision of the United States Department of Agriculture. It is our function to investigate and discover bird-breeding islands, rocks and keys; the locality and number and species of birds is reported to the Department of the Interior, at Washington, and, if the property still belongs to the Federal Government, an order is prepared for the signature of the Chief Executive. This Society then selects a suitable person to act as a guard, who is recommended for appointment as warden. He is then officially commissioned by the Department of Agriculture at a nominal salary, which is supplemented by additional compensation from this Association . . . .

"The plan of bird and animal refuges is destined to be a great factor in the future in the preservation of the wild life of the country. However good the laws are and however well they may be enforced, killing will go on, and there should therefore be refuges established in all parts of the country where shooting is absolutely prohibited. It is astonishing how soon birds and animals learn to know where they are undisturbed, and how little fear of man they display within such bounds. The reservations we are securing are the beginning of the plan of refuges, but the Federal Government owns no land in any of the thirteen original States, nor does it

<sup>1</sup>Bird Lore, Vol. IX, 1907, pp. 285–372, with full page half-tone plates and text illustrations.

own any in Texas. In these fourteen States, the proposed system of refuges can be secured only by purchase, or by a legislative act.

"It is very much to the credit of the authorities in Pennsylvania that the game-refuge plan has been adopted. The authorities of New York should adopt the plan at once, and establish a large number of bird and game refuges in the Adirondack and Catskill Parks. The setting aside of land for a refuge does not necessarily mean that it cannot be occupied by man, it simply means that when a bird or animal reaches these sacred precincts its life is safe.

"The refuge plan must necessarily in the future be largely by purchase or lease or donation from individuals or societies. The Louisiana Audubon Society has been very active in this work, and now owns or leases a large number of islands....

"Thousands of memorial dollars are contributed annually to educational or philanthropic institutions. We suggest that a beautiful and appropriate memorial would be an island or tract of land dedicated in perpetuity as a bird refuge in charge of this Association. It would be a lasting and fitting monument."

Besides the important work of searching out the breeding resorts of wild birds on the keys and islets of the Gulf of Mexico, of the southern Atlantic coast, and of the coast of Oregon and Washington, and elsewhere, and securing their permanent reservation as protected breeding resorts of species that would otherwise soon disappear, much effort is expended in securing better legislation for the protection of birds, and in defending from repeal that which has already been obtained; in educational work in publishing and sending out hundreds of thousands of specially prepared leaflets; in warden work, and in aiding and guiding the work of local societies.

Although the Association has a large endowment, its income is far short of its needs, which, as its work broadens, necessarily steadily increase. The work already accomplished in the short period of its existence is astonishing; the activities of its President, his resourcefulness in discovering new lines of usefulness, his promptness in action in cases of emergency, and his unselfish devotion to the great cause he has thus far so successfully promoted, are a sufficient warrant for a most urgent appeal that his hands be further strengthened by additional financial aid for the work that must necessarily devolve upon the Association from year to year as its work advances. The provision for wardens for the rapidly increasing number of reservations is alone a strong draft upon its resources, which fact should appeal to the philanthropically disposed who have means at their command for the aid of a work of the highest importance to the welfare of man, both economically and esthetically.—J. A. A.

## NOTES AND NEWS.

HOWARD SAUNDERS, an Honorary Fellow of the American Ornithologists' Union, died at his home in London, after a long and painful illness, October 20, 1907, at the age of 72 years.

From Mr. W. R. Ogilvie-Grant's appreciative biographical notice of Mr. Saunders, published in the November issue of 'The Zoölogist' (Fourth Ser., Vol. XI, No. 131, Nov. 15, 1907, pp. 436-438) we take the following:

"Mr. Saunders was born in London in 1835, and was educated at Dr. Gavin Smith's school at Rottingdean, where at an early age he displayed a special interest in birds, and made his first recorded observation. Born of an old and honourable merchant family of the City of London, he received during his early years a business training, which may be traced in his accurate and methodical manner of dealing with any subject he undertook. All his writings bear testimony of the same careful and painstaking treatment, and it is not too much to say that his 'Manual of British Birds,' which is perhaps the best and most widely appreciated of his works, will always remain a model of accuracy and learning compressed into the smallest possible bulk....

"At the age of twenty Mr. Saunders left England in the clipper-ship 'Atrevida,' bound for South America, and his observations on the Albatrosses noted during the voyage were published in a letter to the 'Ibis' for 1866. During 1855 to 1856 he visited Brazil, Chile, and Peru, and remained in the latter country till 1860, his time being chiefly spent in antiquarian researches, and in acquiring a perfect knowledge of the Spanish language. Subsequently he made a remarkable journey across the Andes to the head-waters of the Amazon, and descended that river to Para. Thence he returned to England, where he devoted the greater part of his time to the study of ornithology. Between the years 1863 and 1870 he paid frequent visits to Spain, his proficiency in Spanish being of great use to him during his travels. The results of his observations on the birds of the Spanish peninsula were published in a series of articles which he contributed to the 'Ibis,' 1869-1872.... In 1870 he was elected a member of the British Ornithologists' Union, and took a leading part in its conduct, being still Secretary at the time of his death. He was twice Editor of the 'Ibis,' from 1883-1886, and again from 1895-1900. From 1880-1885 he was Honorary Secretary to Section D of the British Association for the Advancement of Science. He was a Fellow of the Zoological, Linnean, and Royal Geographical Societies, and served on the Councils of all of them, and from time to time contributed valuable papers to their 'Proceedings.' He was also a member of the Société Zoologique de France, Honorary Member of the American Ornithologists' Union, and of various other European societies....

"His ornithological writings were noted for their excellence rather

than for their number, for Mr. Saunders was by no means a voluminous writer. In 1882 he took over from the late Professor Newton the editorship of the fourth edition of Yarrell's 'British Birds,' and in the most admirable manner re-wrote the third and fourth volumes which were still required to complete the edition. Subsequently he conceived the idea of writing his greatest work, the 'Manual of British Birds,' mentioned above, which was published in 1899, and passed through a second edition ten years later. On this subject we have already touched, as also on his monograph of the Gulls [Laridæ, in Vol. XXV, 'Catalogue of the Birds in the British Museum']. On these latter, to the study of which he had devoted the greater part of his life, he was undoubtedly the greatest authority in the world, and he possessed a remarkably fine collection of their skins, which was acquired by the Trustees of the British Museum in 1894. He presented to the nation his fine collection of eggs of Gulls and Terns, and, from time to time, numbers of skins of birds from Southern Spain and other parts of the world.

"He was always ready to place at the disposal of others his great store of information, and a large number of books written by his friends passed through his hands for revision. He was a man of singularly sound judgment, and possessed of a wonderful sense of proportion, consequently his help and sympathy in both public and private difficulties were constantly sought and invariably forthcoming. The loss of such a man and such a friend has plunged the little community of British ornithologists into heartfelt sorrow."

Mr. Saunders, with Dr. P. L. Sclater, attended the second annual meeting of the American Ornithologists' Union, held in New York City, September 30 and following days, 1884, at which meeting Mr. Saunders was elected an Honorary Member of the A. O. U. He also visited Cambridge and other scientific centers in America, and the acquaintance thus formed with the leading American ornithologists ripened into lasting friendships. In recent years the notices of 'The Auk' appearing in 'The Ibis' have come from his pen. His American colleagues who have visited him at his London home will recognize the justness of Mr. Grant's tribute to his memory.

RUDOLPH BLASIUS, a Corresponding Fellow of the American Ornithologists' Union, died at his home in Braunschweig, Germany, after a long illness, on September 21, 1907. An account of his life and ornithological work will be given in a later number of this journal.

MRS. ISABEL PADDOCK CARTER, an Associate of the American Ornithologists' Union, died quite suddenly in St. Johnsbury, Vt., Sept. 15, 1907, a fortnight after her marriage to Edgar N. Carter. She was born in the home where she died, March 19, 1871, and was the only surviving child of Harolin and Mary Hawes Paddock. After an academic course and a year or more in music at Smith College she gave instruction in instrumental

music at the Academy in St. Johnsbury, and for a time was curator of the Museum in her native town. Mrs. Carter was an active member of the Vermont Bird Club and of the Botanical Club of her State. Proficiency in music made it possible for her to do much original work in scoring the songs of wild birds, and Chapman in his 'Warblers of North America' makes frequent acknowledgment of help received from her in this line.—J. H. S.

MRS. JACOB L. SWEIGER, an Associate of the American Ornithologists' Union, died in Waterbury, Conn., March 24, 1907, in the 47th year of her age. She was born in Waterbury, May 13, 1860, and was the daughter of Joseph Shelton and Sarah (Denman) Bronson. The family removed to Watertown, Conn., shortly afterwards, where were spent Mrs. Sweiger's childhood and young womanhood. After her marriage she returned to Waterbury and resided in that city until her death. She was an active member of the Naturalist Club of Waterbury, contributing frequently and materially to the work of that flourishing organization. Mrs. Sweiger was an enthusiastic lover of birds, and her sunny, cheerful disposition won for her a host of friends.—J. H. S.

THE COUNCIL of the American Ornithologists' Union, at a meeting held in Philadelphia November 9, 1907, unanimously adopted the new Article 30 of the International Code of Zoölogical Nomenclature (see *Auk*, Vol. XXIV, Oct. 1907, pp. 464-466 for the full text of the article) as a part of the Revised A. O. U. Code, soon to appear, and instructed the Committee on Nomenclature and Classification of North American Birds to make such changes in the present draft of the Code as were necessary to bring it into harmony with said Article 30. It also provided that in case any differences of opinion should arise in the Committee in respect to the interpretation or application of the Article as applied to particular cases, such points of difference should be referred to the International Zoölogical Commission for decision, and the decisions of the Commission to be accepted as final. As the Zoölogical Commission has signified its willingness to act as an Arbitration Commission on moot points of nomenclature, the way seems now open for the adjustment of any cases where experts may reach different conclusions. It is to be hoped that other scientific bodies which have to deal officially with questions of zoölogical nomenclature will emulate the example of the American Ornithologists' Union.

AN IMPORTANT illustrated work soon to appear in five quarterly parts is 'A Monograph of the Petrels (Order Tubinares),' by F. DuCane Godman, D. C. L., F. R. S., President of the British Ornithologists' Union. The edition will be limited to 225 numbered copies, in large quarto, illustrated with 105 hand-colored plates, drawn by J. G. Keulemans. The work will comprise all of the known species of Petrels, Shearwaters, and Albatrosses,

over one hundred in number. The first part is announced to appear in December, 1907, and the other parts during the year 1908. The publishers are Witherby & Co., 326 High Holborn, London. Subscription price, £2 5s. per part, or £10 10s. for the whole work if paid for in advance.

A BOOK on the 'Hawks of North America' is in preparation by Prof. Lynds Jones and Rev. W. F. Heninger, of Oberlin, Ohio. "Although scientific in character, special stress will be put upon the diagnostic marks for the field student." Each species will be illustrated by photographs of head, tail, wing, and claws. Contributions on habits, distribution, etc., from bird students throughout America, especially on the rarer species, will be greatly appreciated and due credit given for them by the authors.

'THE Home-life of some Marsh-Birds,' photographed and described by Emma L. Turner, F. L. S., and P. H. Bahr, B. A., M. B. O. U., is announced by Witherby & Co., 326 High Holborn, London. It will contain 32 full-page plates. 64 pages of letterpress, descriptive of the points of interest, and many text illustrations. Demy 8vo, price, 2s. 6d. net.

A WORK on the 'Birds of Britain,' by J. Lewis Bonhote, M. A., F. L. S., F. Z. S., is announced by Adam and Charles Black, Soho Square, London, to be illustrated by 100 full-page illustrations in color selected by H. E. Dresser from his 'Birds of Europe,' of which they are to be facsimile reproductions. Price 20s. net (post free 20/6). The volume is written in popular style by a well-known ornithologist, and will have a complete account of every species one is likely to meet with in Great Britain.

THE twelfth annual meeting of the Maine Ornithological Society was held in the rooms of the Portland Society of Natural History, Elm St., Portland, Maine, Nov. 29-30, 1907. The officers present were: President, Prof. Leslie A. Lee, Brunswick; Secretary-Treasurer, J. Merton Swain, Farmington; Editor, W. H. Brownson, Portland; Councillor, Capt. H. L. Spinney, Bath; Councillor, Prof. Ora W. Knight, Bangor. There were about twenty-five other active members present, and two corresponding members, Hon. Thos. J. Emery, of the Harvard Law School, and Sherman E. Phillips of Canterbury, N. H. The officers, as given above, were reelected for the third term.

The next annual meeting will probably be held in Brunswick, the Friday and Saturday following Thanksgiving, 1908. Many scientific papers and talks were listened to with a great deal of interest. Among them were the following: 'The Terns of Bluff Island,' by W. H. Brownson; 'The Decrease of Eagles in The Kennebec Valley,' by Capt. H. L. Spinney (for fourteen years Keeper of Seguin Island Light); 'The Economic Value of Birds,' by Prof. E. F. Hitchings (Entomologist to the Department of Agriculture of Maine); 'Destruction of Birds during a Severe Storm in April, 1907,' by Miss Marshall; 'Birds observed along the Highway,' by J. Merton

Swain; 'Bird Migration in Maine,' by O. W. Knight; 'The Feathers of Birds,' (illustrated), by Arthur H. Morton. Many other shorter notes were given by other members.

A Public Meeting was held Friday evening, when a very enthusiastic audience listened to the three illustrated lectures: 'The Birds about Portland,' by W. H. Brownson; 'The Birds about a Light-house,' by Capt. H. L. Spinney; 'The Birds along the Eastern Coast,' by Prof. O. W. Knight.

A committee was chosen to send resolutions to the members of Congress, from Maine relative to the appropriations and continuance of the U. S. Biological Survey.

Ten new members were elected, and the Society is in a prosperous condition. The members are very enthusiastic for the future of the Society.—  
*J. MERTON SWAIN, Secretary.*

THE THIRD annual meeting of the National Association of Audubon Societies was held October 29, in the American Museum of Natural History, New York City. Members were present from Massachusetts, Connecticut, New York, New Jersey and North Carolina.

The treasurer's report showed that the income of the Society during the year had been \$17,978.53 and that the expenditures were \$26,843.43, making a deficit of \$8,864.90. This condition arose from the fact that legislative expenses were very heavy during the past year, and it was also necessary to help several of the State Societies to carry on their local work. Further, the Society received only six months' interest on its endowment fund, as none of the investments of the Society were made early enough in the year to permit it to receive a full year's interest.

The Society now holds mortgages amounting to \$316,000 on six pieces of New York City property. Each title is guaranteed by a Title Guarantee Company. None of the loans exceeds two-thirds of the appraised value; the said values being certified to by the most conservative and well-known appraisers in New York City. All of the loans pay 5 per cent interest and are non-taxable.

The President gave a synopsis of what had been accomplished during the year 1907, and outlined some of the plans for 1908. For details of his report, together with the reports of the State Audubon Societies and other matters of interest, readers are referred to the complete report which follows in this number of *BIRD-LORE*. After December 15, members of the Association can receive separates of the annual report and financial statement on application at the office, 141 Broadway, New York City.

The following Directors were elected to serve for a period of five years, being the class of 1912: Mr. F. M. Chapman, New York; Mr. Witmer Stone, Pennsylvania; Dr. Hermon C. Bumpus, New York; Mr. Frederic A. Lucas, Brooklyn; Mr. Carlton D. Howe, Vermont.

A resolution approving the work of the United States Bureau of Bio-

logical Survey, and calling upon Congress to amplify the work of the said Bureau, was unanimously passed, and it was further resolved that the secretary send a copy of the resolutions to every member of the next Congress.

¶ Subsequently a meeting of the Directors of the Society was held, when the following officers were elected to serve for one year: President, William Dutcher; First Vice-president, John E. Thayer; Second Vice-president, Dr. T. S. Palmer; Secretary, T. Gilbert Pearson; Treasurer, Frank M. Chapman. Mr. Samuel T. Carter, Jr., was reappointed counsel for the Society.

► The President appointed the following Standing Committees: Executive Committee — Dr. J. A. Allen, Dr. George Bird Grinnell, Mr. F. A. Lucas, Mr. F. M. Chapman.

Finance Committee — Dr. Hermon C. Bumpus, Mr. John E. Thayer, Mrs. C. Grant LaFarge, Mr. F. M. Chapman.—T. GILBERT PEARSON, *Secretary*.<sup>1</sup>

IN THE November-December issue of 'Bird-Lore' (Vol. IX, 1907, pp. 249-255) is an article of special interest on 'The Heath Hen, a Sketch of a Bird now on the Verge of Extinction,' by George W. Field, chairman of the Massachusetts Commission on Game and Fisheries. The Heath Hen "was formerly distributed from Cape Ann to Virginia, and was especially abundant in Massachusetts, Rhode Island, Connecticut, Long Island and New Jersey." It was exterminated in Massachusetts and Long Island, and probably over the intervening district, by about 1840, but is known to have survived in New Jersey till 1869. Since this date its last stand has been on the island of Martha's Vineyard, off the coast of Massachusetts, where the area it inhabits has become restricted to about thirty square miles, and its numbers reduced to about one hundred individuals. This article is illustrated by photographs showing the home of the Heath Hen, its nest and eggs, and the Heath Hen Group in the American Museum of Natural History.

In the same number of 'Bird-Lore' (p. 283), is a note on 'The Protection of the Heath Hen,' which shows that an effort is being made to raise money for the purchase of land for a reservation for it on Martha's Vineyard, toward which the sum of \$2338 is already pledged. It is hoped "that sufficient funds may be raised to secure extensive tracts as refuges for the Heath Hen, Least Tern, Upland Plover and other birds which still resort to this island." Every dollar contributed for the purchase of land will add, it is said, at least one acre to the proposed reservation. Contributions may be forwarded to the Commissioners on Fisheries and Game, State House, Boston, Mass.

<sup>1</sup> From Bird-Lore, Vol. IX, 1907, pp. 282, 283.